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ONTARIO

P R O C E E D I N G S

OF THE

SELECT COMMITTEE, APPOINTED BY THE ONTARIO
LEGISLATURE, TO ENQUIRE INTO CERTAIN MATTERS
AND LEGISLATION REGARDING SMOKE CONTROL AND
AIR POLLUTION, IN ONTARIO.

Mr. A. H. Cowling, Chairman,
Presiding.

Dr. Frederick Evis, Secretary.

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VOLUME XV

Tuesday, November 22nd, 1955.

Detroit, Michigan.

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F I F T E E N T H D A Y

Detroit, Michigan (U.S.A.),
Tuesday, November 22nd, 1955
9:00 o'clock a.m.

— — — —

The further proceedings of this Committee reconvened pursuant to adjournment.

PRESENT:

Mr. A. H. Cowling, Chairman,
Presiding.

Messrs. Morningstar,

Elliott,

Brandon, Q.C.,

Murdoch,

Hon. Mr. Kelly,

Thomas (Oshawa),

Gordon,

Dr. Fred Evis, Secretary.

— — — — —

A P P E A R A N C E S :

Mr. Harry Belyea, Industrial Hygiene Branch,
Ontario Department of
Health.

Mr. Ben Linsky, Chief, Smoke Abatement Bureau,
City of Detroit, Michigan.

Mr. Jerry DeNeve, Detroit, Michigan.

Mr. Tomlinson,	Assistant Chief, Smoke Abatement Bureau, Detroit, Michigan.
Mr. Samuel Boyle,	Chief Smoke Inspector, City of Windsor, Ontario.
Mr. Garrett,	Smoke Inspector, City of Windsor, Ontario.
Mr. George Gaudaen,	Air Pollution Committee, Automobile Manufacturers Association, Detroit, Michigan.

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B E N J A M I N L I N S K Y ,

Chief, Smoke Abatement Bureau, Detroit, Michigan,
appearing before the Committee, but not being sworn,
testifies as follows:

BY THE CHAIRMAN:

Q. Mr. Linsky, we would like you to proceed in your
own way, if you will.

A. I would like to read out to you what we have
planned for you, as a start.

We will hold our discussions here from now until
noon, and sometime during the morning we will be received
by the Mayor. His office will call down when he is
available and we will break into our discussion whenever
that happens, and call upon him at his office on the
eleventh floor.

Also during the session this morning, Mr. George
Gaudaen, Engineer of Planning, the Automobile Manufacturers

Association, will come in and give us a short discussion of what the Association is doing to improve and reduce undesirable effects from exhausts from automobiles, one of the hydrocarbons which is an area-wide problem, the other being the smoke fumes and odours, what we call the "spitting-distance nuisances" problem on the highway for those who live or have to work near or around the highways.

I understand he will be in about 10:30, and we can break into our discussion to hear him.

Following our discussions here, we will take a bus and go to the Engineers Society for luncheon. Our guests at the luncheon will be two of the members of our Common Council, and two members of the Advisory Board to this Bureau.

BY MR. ELLIOTT:

Q. Are they private citizens?

A. Yes, they are private citizens, who are designated in our Ordinance.

Our Advisory Board is made up of technical advisors to the Bureau, and the Department, and specifically to our Commissioner. He need not follow their opinions but he must have to have good judgment if he is going to override them. That has happened only once when following a conclusion, the Advisory Board wrote and suggested a change quickly, and the boys had to make a change based on my

technical recommendation at the moment.

Q. Who makes the appointments?

A. They are appointed by the mayor. There is no term of appointment.

One of the members must be a representative of the coal trade; another must be a representative of the railroad industry -- a bona fide representative; the third must be a doctor, and the fourth must be a competent combustion engineer, and the fifth must be a woman who is suitable -- I think the phrase is "experienced for such appointment" -- which means one who has been active in women's club work, and that kind of thing.

There have been no replacements of the members on our Advisory Board, except as they left or where a man retired.

The combustion engineer's company moved out of town, and he went with them, so he was replaced, but it has been completely non-political in any narrow sense.

Q. Is your legislation state legislation?

A. Our legislation is city legislation. We operate under what we call "Home Rule" in Michigan, and Detroit has all of the Home Rule provisions, so, very generally, very little of the local legislation has to be approved at state level, or, as you would probably call it, "at provincial level".

We do not have anything which would be equivalent

to your municipal board.

BY THE CHAIRMAN:

Q. While we are on this point, where does the state fit into the air pollution and smoke picture?

A. In the State of Michigan, at the present time, the State is doing very little.

The Occupational Health Division of the State of Michigan's Health Department -- and you may know it as an "Industrial Hygiene function" -- performs some investigating and gives some advice to local communities which ask for it.

Their authority, apparently, extends only when there is a proven health hazard, which, as you know, is not, in many cases, a polluting condition. That is about it.

We have industrial hygienists stationed in various parts of the State, each man is assigned to a district. The community may call upon him for advice or a "look see", and they generally find they have no authority, but if they happen to know a good answer they throw it on the table.

Q. Would it be fair to say the State is not taking leadership in regard to smoke control?

A. That is correct in Michigan, Mr. Chairman.

BY MR. ELLIOTT:

Q. They have no department in the state handling air pollution?

A. There is no department, given formal assignment for the handling of air pollution.

Informally, as a citizen writes in and says "this is killing me", they will go out and take a look at it. It is actually an administrative division and not an authoritative legislative authority.

BY MR. MORNINGSTAR:

Q. Probably something like our workmen's compensation where, if there is a hazard to an employee, they may take some action.

A. If there is a definite hazard, yes -- if it were a proven hazard definitely.

But in our experience ninety-nine percent of our work relates to things which no physician or medical authority will say definitely, "it is a health hazard".

It leaves a large part of the real problem outside of their jurisdiction.

BY MR. BELYEA:

Q. There is no place a small community can turn for help, unless they set up an actual ordinance themselves?

A. That is right.

Q. And if they are too small to employ the necessary staff --

A. They can employ a consultant.

Something new has come into the picture in the past couple of months. The communities near Detroit can arrange with the City of Detroit to perform services for them at cost.

We are now having negotiations with a community down river, on our side of the river, to furnish this kind of service on a year-round basis.

BY THE CHAIRMAN:

Q. Does your control extend outside the metropolitan borders of Detroit?

A. No, our control is limited to the city limits.

Q. There is a definite line?

A. There is a definite line, yes.

Q. In other words, if the nuisance or smoke or pollution is across the street from the border, there is nothing Detroit can do about it?

A. That is a little different. We cannot do anything under our local city ordinance. We think, without question, there are things we can do by "slugging it out" in the courts.

There is a precedent for that in inter-state, but there must be adequate recognition by the courts, and I am not sure whether there would be. It has never been determined as yet.

BY MR. BRANDON, Q.C.:

Q. Is that on the question of nuisances?

A. Yes.

BY THE CHAIRMAN:

Q. What I was getting at, Mr. Linsky, is this:

May be, in the course of studying this you may have some ideas on this particular point which we think is very important, because this matter of smoke control, as you know, does not stop at the border line of any city, or county or province or country, but it cuts across all borders.

You may have a suggestion you can offer based on something which you have learned from your own experiences in Detroit.

A. I have some questions, but I do not have the candid answers, believe me.

The minute we start figuring in terms of going outside of our borders, it means we must refer it to a higher level of government. That could be the county, in Michigan, but the county would need some enabling legislation by the state in order for it to work in Michigan.

If it is beyond the county -- and we have many industries outside of the county limits -- and as it happens, one major offender out on the 8-mile Road is now considering a voluntary control program. We

knocked on their door, and spoke to them about it, and they said "We will spend our money", but if we had said, "You must do this", they would have said "This to you, bub", and we would have to go to the county, and that means they would have to go to the Metropolitan authority which does not now exist, in fact, in Michigan, or we would have to get the authority of the state to designate the control.

That does not give the answer, but in clarifying the problem, it may lead you to an answer, which may work for you.

BY MR. BELYEA:

Q. Do you know of any state which has acted on that?

A. Without taking on the whole job at state level?

Q. Either way.

A. The conflict in ideas is either you try to get the job done at the local level, and the few things you cannot do, you do at a higher level. That is alright.

But how can you take a few things and still leave the rest of them down here (indicating).

There is an attempt being made now in New Jersey which is in course of preparation whereby the state will take over complete control, but there the state will probably say, "We will designate the areas, but you 'guys' handle it at the lower level yourselves".

The entire state law is less than two years old,

and they are just getting the mechanics organized, but whether there will be any sand in the gears, they do not know as yet.

BY DR. EVIS (Secretary):

Q. What happened in Oregon?

A. I am not up on that and I should not speak.

BY THE CHAIRMAN:

Q. What is the capitol of New Jersey?

A. Trenton.

Q. Is that the only state where they have set up local control?

A. It is not operating yet, as far as I know. Whether it will work out, it is now difficult to know.

I am trying to keep in touch with it but I have not been able to spend the time to keep in very close touch with it. Maybe some of the others have.

Q. What would be the advantages of a state controlled program like that?

A. In New Jersey you have a relatively small state. It is packed with industrial people. They are living in each others backyards. Then, relatively, we have all our communities down the river and across the river, speaking as far as space is concerned.

BY MR. BELYEA:

Q. It will be more like England?

A. Yes, it would be more like England, where they have a

belt which Sir Hugh Beaver described as being fifty miles wide and a couple of miles long, just jammed full of industry.

Q. Some fifteen hundred, I understand?

A. Yes, some fifteen hundred. It is a major industrial center.

New Jersey is in that position. Sure, they have their truck farms in England, but they have a lot of those in New Jersey too.

They have what looks from here to be almost a homogeneous problem, whereas in the state of Michigan you have a few centers, just as has Ontario, and the rest is agriculture or barren waste, or cut-over land.

We do not have the homogeneous problem they seem to have in New Jersey. We do not have the "all-your-eggs-in-the-same-basket" problem such as they may have in other communities.

BY MR. BRANDON, Q.C.:

Q. Is your legislation premised on the state legislation?

A. Not particularly. It is premised on our city charter.

Q. There is no direct relationship between your state legislation and county legislation, but municipally it is a direct charter authorization?

A. That is correct.

Q. Is there any control at the county level or state level over your operations?

A. At state level -- only if there would be a dire health hazard -- a critical health hazard. That is the only one where it might occur, but I have never explored it or developed it.

Q. Who would be the instigator of that? Would it be the state authority or at a municipal level?

A. If it is a dire health hazard, I think at any level "papa" must act, whether it is the governor or the chairman of the county board of supervisors, or the county health officer or the city health officer, where they would have an overlapping relationship, just as we have an overlapping relationship with our City Planning Commission, or our Zoning Board.

They will tell somebody "You can use this land," but we will say, "Hey bub, you can use it, yes, but you can only use it if you do thus and so."

We have relative over-lapping with the Fire Department, and wherever we have these over-lapping relationships, we work out our model things, so we are not conflicting, and do not get the citizenry into conflict.

MR. ERANDON, Q.C.: In such a case as any emergency, is there any compulsion at State level to

require the county or municipal authority to act?

Supposing your municipal authority, in its wisdom, says, "This is o.k.," but at State level, it is considered an emergency; could they compel the inferior authority to act?

MR. LINSKY: I have not explored that specifically, but to the best of my idea, the total police power of the State government requires the protection of citizens, regardless of what particular community levels think about it.

But that is in dire hazard, and I think the only way is to establish perhaps a health-control law, but in that, we are not optimists.

MR. BELYEA: We may have given consideration to the problem of the ordinances; at any rate, we want to be in a position to advise the municipalities. Could you give us some more ideas regarding the set-up of the municipal department, qualifications for the staff, and so on?

You might start off by telling us your own qualifications, and your technical background.

MR. LINSKY: I will start off by qualifying myself, for your judgment.

I am a graduate mechanical Engineer. I have my Bachelor's Degree, and my Master's Degree in Engineering.

I am^a/registered Professional Engineer in the State of Michigan.

My work experience includes three years of clerical and low-level work in industry, followed by four years in safety engineering inspections, and my field was inflammable liquids, gases, and things of that sort, which step up in a hurry.

That was followed by three and one-half years of Army service in Industrial Safety by producing the materials for the Ordinance Department, followed by one and one-half years in the delightful occupation, known as "contract termination negotiations". Some of you know about that kind of thing.

That was followed by three years in this Bureau as a Supervising Engineer, one year as Assistant to the Head of the Bureau, and when he retired, I assumed his position, and was promoted to it on Civil Service examination, and have held this position for just over four years, as Chief of this Bureau.

The minimum qualifications for the job require a college degree in Engineering, and professional registration qualifications, plus specific experience in air pollution, including combustion, and the industrial air pollutants, the so-called "precise pollution".

MR. BELYEA: Your own city requires a professional man at the head?

MR. LINSKY: Yes, all the larger cities of which I know do. I am thinking of New York, Philadelphia, Cincinnati, Milwaukee County, Cleveland, which all require professional engineers to operate the Air Pollution and Smoke Abatement Bureau.

The primary reason underneath that, I believe, is that the major part of the job is that you have to get things changed; you have to get things done; you have to be able to evaluate a process when it is still on paper, and getting new "stinkers" in, while cleaning up the old ones.

The job has two levels, the old processes, and the taking on of new ones, and seeing that the new ones come in properly.

MR. MURDOCH: How many similar offices would there be in the State of Michigan, Mr. Linsky?

MR. LINSKY: The city of Grand Rapids has one man who spends about three-quarters of his time on air pollution -- "Bob" Bolands, and the other quarter of his time is real estate work.

The city of Wyandotte has a man who spends 20 percent. of his time on air pollution, and the rest on building inspections and construction.

The man in Highland Park spends about ten or twenty percent on air pollution, and the rest on safety work, particularly.

Those are my impressions of what they do, from knowing them fairly well.

That is all we have in Michigan, Oh, I think there is a man in Bay City, and a man in Port Huron, spending perhaps 5 percent. or 10 percent. of their time on "special problems", as they occur.

That is all in the State of which I know.

MR. BELYEA: Would you tell us what you consider to be an ideal Advisory Board? Would it be partly responsible to the municipalities, and partly responsible to health in the department?

MR. LINSKY: The purpose of the Advisory Board, as I visualize it, and as ours has worked out, is a two-way street. It is a group which interprets the community to the department, and interprets the department back to the community, therefore, it should represent the significant parts of the communities which are concerned.

There are two parts which are concerned, those who are polluting, and those who are polluted.

The Advisory Board has the authority to ask questions, and administratively has the authority to

make recommendations, and that is it. The decisions and the responsibility still have to rest with the operating department.

I think that about sums it up. They have to represent the community which is being disturbed, and those who have to clean up the pollution.

MR. BELYEA: How many would you have on the Board, and what type of people? Some professional and some laymen?

MR. LINSKY: You definitely should have professional people -- some professional people -- in both camps, as it were, on the Advisory Board, because so much of the subject matter for discussion is technical.

You also have good people who have only a lay understanding of the problems, both medical, engineering, meteorological --

MR. BELYEA: And legal?

MR. LINSKY: And legal.

THE CHAIRMAN: What about electrical people? Have you any electrical representatives on the Advisory Board?

MR. LINSKY: No; but the electrical people, we assume, are on tap for advice at any time. They are part of the governmental organization.

We should not have to formally appoint them

to the Advisory Board, but we should know whenever we need them, they are available.

We have worked very extensively in the past three years in integrating with the elected and appointed men, our City Council, our Mayor, and so forth, and we make sure we understand each other, and we get their ideas, and furnish them with ours.

MR. BELYEA: Should an Appeal Board be separate, or a part of the Advisory Board?

MR. LINSKY: I believe the Appeal Board should be separate and distinct from the Advisory Board.

The Advisory Board should not be hampered in its thinking, but should be encouraged in every way in order to make it work properly.

It should not have to restrict its imaginations; it should ask for what is needed, without having to worry about how hard it will be to get it done.

Then, with respect to the other group: the Advisory Board has rules, a sort of a Code, and the two may be synonymous, as they are in this department. It is an administrative body.

MR. BELYEA: Is it a professional body?

MR. LINSKY: I think so, because the problems are technical.

MR. BELYEA: You might tell our group a little

more about that Appeal Board. I do not think we have gone into that.

MR. LINSKY: It is another department. The Appeal Board is composed -- perhaps I had better get that, and give it to you accurately.

THE CHAIRMAN: While we are waiting for that, are there exemptions to the by-laws?

MR. LINSKY: There are no exemptions, as I understand the word.

THE CHAIRMAN: Just stop there, please. There are no exemptions under the by-law. What work does the Appeal Board do?

MR. LINSKY: Basically, where the spirit of the law is being met, but the letter is not quite. We go to two levels, and both are ordinances, that is, the Board of Rules, and the Board of Appeals. We have a section relating to the Board of Rules, whereby it shall also act as the Board of Appeals.

If you would like, I will read the references to the Board of Rules, and the Board of Appeals taken from the official Building Code of the City of Detroit, as amended to July 1st, 1954.

In regard to the Board of Rules, it says:

"Section 112. Board of Rules. The Board of Rules shall consist of seven members. The Commissioner,

the Superintendent of the Public Lighting Commission, the Sanitary Engineer of the Board of Health, the Fire Marshal, and in addition a mechanical engineer, a structural engineer, and a fire-prevention engineer, who are to be appointed by the Mayor to serve at his will and pleasure. Any vacancies in office shall be filled by the Mayor.

The Board of Rules shall provide rules and regulations for the issuance of all licenses and permits pertaining to the work of the Department as may be required by all codes and ordinances of the City. The Board shall, by general rules, prescribe the fees for examinations, permits, licenses, inspection of boilers, buildings, elevators, testing of materials and all other work of the Department.

The Commissioner shall be the Chairman of the Board. Four members shall be necessary for a quorum. No matter shall be determined except by a majority of all members present and in no case shall any motion be passed without at least three affirmative votes. The Chairman shall be permitted to vote. The Commissioner shall designate some member of the Department to act as Secretary of the Board.

The Secretary of the Board, shall at the order of the Commissioner, call meetings of the Board and shall notify the members thereof in writing at least two working days in advance of such meetings. The Secretary shall keep a record of all decisions of the Board and shall furnish copies thereof to all interested parties upon request. "

Then, in regard to the Board of Appeals, it is provided:

"Section 113.1. The Board of Rules shall also act as a Board of Appeals and shall proceed as set forth in Section 112.

Section 113.2. The Board of Appeals shall have power to interpret any of the provisions of this code upon application in writing by the owner or lessee, or his duly authorized agent, when there are practical difficulties in the way of carrying out the strict letter of this ordinance, so that the spirit of this ordinance shall be observed and public safety secured and substantial justice done. The particulars of such interpretation, when granted or allowed, and the decision of the Board of Appeals thereon shall be entered upon

the records of the Department and a signed copy shall be furnished the applicant.

Section 113.3. In case of dissatisfaction with the decision of the Commissioner, except in respect to insecure and unsafe buildings and equipment requiring immediate action, the question in dispute may be referred to the Board of Rules, and such board shall proceed to hear and determine the appeal. The person taking the appeal shall pay a fee of not to exceed twenty-five dollars (\$25.00). If the appeal shall be decided against such person, the fee shall be retained by the board and paid into the department, but if in favor of such person, it shall be returned to him, and the cost and expense of the appeal shall be paid by the city.

Section 113.4 Records of Decisions. It shall be the duty of the Chief of each Bureau to preserve and make a part of the permanent records of the office, all the rulings of the Commissioner, the opinion of the Corporation Counsel, the decision of the Chief of the Bureau and the Board of Rules which affect the provisions of this code concerning his Bureau and to be governed thereby thereafter until the code governing the matter

is amended to take care of point in question. Such decisions and ruling shall be prepared in convenient form and distributed to those interested and an indexed reference kept.

Section 113.5. Amendments to Ordinance.

Whenever the Board of Appeals finds this code or any other ordinance enforced by the Department to be inadequate, unjust or obsolete, it shall be the duty of the Board of prepare or have prepared the necessary amendments to the ordinance and submit the same to Common Council with the Board's approval."

(page 1062 follows)

We have had one case go from our Bureau to the Board of Appeals, and that was due to the conditions which existed at that time.

We had a hot mix asphalt plant where gravel is treated and mixed with asphalt, and sent out on the roads for application.

At the time -- and this was about four years ago -- this one plant which, incidentally, was the first to put in a completely effective washer collector to the asphalt plant. There had been others which were partially successful, but this was the first one which treated all the nuisance, but it still did not meet the strict letter of our law; it did not make the three-tenths of a grain per cubic foot go out of the stack, with the usual corrections.

So they appealed to the Board of Appeals, and we were brought in with our records to show the measurements we had made, where they deviated from the Act.

Their appeal was quite formal and spelled out what they wanted a deviation in.

We were brought in, and addition to the measurements we had already taken, the mechanical engineer member of the Board asked some other questions. He wanted to know specifically certain things, for instance,

distances. He wanted to know the rate of emissions that occurred per hour going out, and more detail of the process, and he wanted other information of varying kinds.

He wanted to know if they were going to accept our recommendation for granting the Appeal, but they wanted to cool down the condition exactly, so when the next one came in, it could not be said it was done by caprice.

MR. ELLIOTT: You were learning from your past experiences?

MR. LINSKY: Yes.

MR. BELYEA: Is the Board of Appeals the last place to which they can turn?

THE CHAIRMAN: Is the decision final and binding?

MR. LINSKY: Except an appeal to the courts. It is finally an administrative matter.

MR. BELYEA: And if the courts concluded the demands were unreasonable, they would be successful in avoiding the condition?

MR. LINSKY: Not necessarily. The law of air pollution, and proof to the courts, is changing and opinion is changing. It has reached a point now where mechanically, chemically and physically, you can

do anything you want to, if you want to spend the money. If you have money enough, you can change gold into lead, and back again. However, some are away "out in left field" economically.

But the fact is that anything can be done if the money will be spent, and that has changed the picture quite completely.

So now it becomes a matter of realizing how much damage, how much per area, how much financing will be required, and how much costs.

MR. BELYEA: We would like you to go into that a little more, because of the exemptions we have. Do you know of any case of smoke which cannot be controlled, or where it can be said it is not reasonable to control it; because of the carbonaceous and volatile matter which comes from fuel?

MR. LINSKY: No, I do not. There are some customs in industry which will have to be overcome, for instance, in a coke-oven operation, when it is being pushed into a glorified cradle, and when it is first exposed to air, and before it gets in under the quench tower to quench it out. That is customary.

It is not yet the custom to govern the thing actively, except I can visualize what would happen if they tried to move into Los Angeles County. It would

mean a special housing to capture the smoke, and clean it basically.

Under present practice, a court might or might not rule it was unreasonable. I would not want to predict the court's findings. It would depend on a number of things as to where the courts would go now. But in five years, with the data which may be then at hand, I can visualize they might rule they do not believe it is an unaccustomed type of control, from an engineering standpoint.

MR. BELYEA: The railroads say they cannot light up without making smoke. I believe you said it was physically possible to light up a steam locomotive with zero smoke.

MR. LINSKY: It is both theoretically and practically possible. It can be done, and has been done.

THE CHAIRMAN: While you are on that subject, do you control steam locomotives here?

MR. LINSKY: Yes, we do. We cannot stop an engine in its operations, because that would be unfair to interstate commerce, and might create a severe hazard by an unscheduled stoppage of the engine.

We have had that decided in the courts, and in Appeal, and we know the railway solicitors are smart

enough to appeal, if they think they have a chance.

On five or six occasions, we have taken observed violations into court, and in one case it was found to be a mis-operation by the fireman and engineer.

Under our ordinance, if the operators are properly instructed, and have the proper means to prevent the emission of illegal smoke, then failure to operate properly places the responsibility directly on the operating personnel.

In one case, the operation was such that when the fireman saw the inspectors watching him, he turned the smoke consumer valve, and it was immediately cut off.

We took it into court. My predecessor was the then Chief. I was in the Bureau at the time, and the court found the two men guilty, and suspended sentence at our suggestion.

All we wanted was a finding of guilt, so we could say, "Boys, we can do it if we have to".

MR. ELLIOTT: Have you any control over the boats on the river?

MR. LINSKY: No. All we can do is stamp our feet and scream to the two Federal governments; Mr. Boyle screams through your Department of External Affairs, and I scream through our Secretary of State.

In October, the International Joint Commission had its meeting in Ottawa, and directed its legal Counsel to complete the preparation of a legal recommendation for the two governments to be considered and passed upon by the International Joint Commission at their annual meeting in April coming, which will throw its recommendations upon the two governments, if possible, for adoption.

THE CHAIRMAN: Where will that meeting be held?

MR. LINSKY: In Washington. With respect to air pollution, they, themselves, have only the authority to enquire and report as requested.

In connection with water pollution, they have the authority to enquire and report as they find it, and make recommendations.

In regard to water levels, they have control.

MR. ELLIOTT: Does your Department enter into water pollution, also?

MR. LINSKY: No, except in one small area. That is, we coordinate with the water pollution people so that --

MR. ELLIOTT: There is another Department which deals with water pollution?

MR. LINSKY: That is correct.

MR. ELLIOTT: In this State?

MR. LINSKY: In this city, and in the State.

Here the State has taken strong leadership in water pollution. The State Water Commission has taken strong leadership with a technical staff, and orders and rules, in a manner which they wished many other states and provinces would do.

MR. BELYEA: Coming back to the railways; do the Canadian railways coming into Detroit meet your ordinances?

MR. LINSKY: I believe the Grand Trunk Western is what you call a "Canadian railway", in that sense?

MR. BELYEA: Yes.

MR. LINSKY: At the present time, there are two railways which have coal-burning locomotives. The New York Central, which has a few left, and will be out of the coal business by the first of the year, and the Grand Trunk Western.

The Grand Trunk Western's habits in regard to smoke control had become so loose, that we had to what is called "crack down".

The Grand Trunk management, within the last two months, established an operating smoke-abatement committee. Its chairman and staff are drawn from the Company itself. The chairman is in the General

Manager's office, I think he is the Assistant General Manager, and he has invited us to sit with them and point out to them the error of their ways, and to "needle" them. As a matter of fact, things have improved dramatically in the past three months.

THE CHAIRMAN: That fast?

MR. LINSKY: Yes.

MR. BELYEA: Have they the equipment for the smoke control?

MR. LINSKY: Their operation programme, that is, the manpower and management and superintendents, they were expected to take care of at once, and that is what they did mostly in three weeks.

The equipment problem is difficult, because they recognized that diesels will replace their coal-firing engines, so the repairs and major preventive work were "going to Hell in a basket", and they are simply letting it drop.

The adequate maintenance, instead of being kept current, has changed so they are taking care of things almost on a breakdown basis, and they are finding it harder and harder to get replacement parts.

The locomotive-parts manufacturers are either out of business, or they have destroyed the patterns for major castings, and they do not have their machines

set up to do the machine work. They are scavenging the old engines to get these castings, and when they run out of them completely, they will have to "scratch gravel".

THE CHAIRMAN: That is a very good point.

MR. LINSKY: What I was going to say on that in regard to these locomotives, was this: a few years ago, you were probably in the stage where we are getting to now in converting from steam to diesel and oil.

We immediately approached the railways and said, "Do something about this smoke", and they said, "Yes, but give us a little time. Soon we will be dieselized -- in a few years, so 'go along' with us".

What would your answer be to that one?

It did not happen to come up that way. This ordinance was passed in the fall of 1947, and there was a complete revision of our previous code. It was passed after a tremendous amount of public uproar.

There were 80,000 signers to petitions collected in the city of Detroit by voluntary citizens' groups at all levels, the Parent-Teachers Associations, the Godd-Neighbors Association, the Kiwanis Club, and other service clubs. They set up tables on the street corners and in office buildings, and made public addresses --

THE CHAIRMAN: When was that?

MR. LINSKY: In the fall of 1947.

The technical profession had been authorized by a Committee of the Engineering Society of Detroit to take this up, and when they came to the Council table, the only real opposition to the ordinance -- and it was very vocal -- was from the coal trade, because some of the coal people were getting out of Detroit, as they would no longer be able to sell coal for hand-fired equipment.

The railways saw the "handwriting on the wall". Whether that was due to group thinking or being well advised, I do not know, but there were able individuals in the railroad industry in Detroit; in any event, one man took leadership in forming the Railway Smoke-Abatement Committee. That was Mr. "Al" DeForest.

After the ordinance was adopted, he was appointed as a representative of the railways on our Advisory Board. He did yeoman work in his own group; he arranged for them to visit each other's roundhouses and observe their firing-up practices. They were what you might call "sneak observations" of each other's groups. They would get in a car, perhaps five of them, with a sixth one from our Bureau, and they would ride around and spot their own operations, when the boys

engaged in the operations did not know they were out, just to see how well they were doing, and where it might be improved. This was a major effort.

I cannot answer your question exactly, because they started out when we knew we had a problem, but we did not want to get "kicked in the shins", and we wanted to learn the facts before we got kicked.

From then on, we were pretty much in the position of helping them to get what they needed from their managements, in order to get the money out of their management.

For example, in 1947, Mr. DeForest started working to get the boilers in the New York Central roundhouse, and the Michigan Central, equipped. You can see the Michigan Central engines from here. There was a smoke problem, and the cost of all kinds of equipment was rather heavy. He started work in 1947 to get these modernized and replaced.

It took him four years to get the roundhouse equipment, which represented a couple of hundred thousands of dollars, with the new stokers, and so forth.

It was not until just exactly a year go that he got the boilers replaced at the Michigan Central, and they use heavy oil for replacements, and our good friend "Sam" Boyle no longer has the blue-black smoke

to tell him which way the wind is blowing.

MR. BRANDON, Q.C.: Your railroads will be entirely dieselized on the 1st of January?

MR. LINSKY: No, only the New York Central, and the Grand Trunk Western are the only ones on which they will have coal-burning locomotives.

MR. BRANDON, Q.C.: Have you any suggestion as to when they will be dieselized?

MR. LINSKY: We do not have the information as to when they will be dieselized completely. We just do not know.

From the top floor of this building, you can look out on the Brush Street depot, where the engines are fueled at a roundhouse away from the centre of the city, and brought down here after being fueled, and after they are fueled, then they move back out.

However, they have the proper type of firing up at the roundhouse well enough in hand so they can come down and stand, and go back, without having to rebuild their fires, because there are no fire-building facilities there. So they have to prepare the engines about three or four hours ahead of time if they are going to do the job of coming in and going out without too much smoke.

DOCTOR EVIS (Secretary): I wonder if we could get

Mr. DeForest to come before the Committee at one of our sittings?

MR. LINSKY: He has retired, but knowing the man, I am certain he would welcome an invitation of that sort.

DOCTOR EVIS (Secretary): The Canadian National and the Canadian Pacific Railways say it cannot be done.

MR. LINSKY: That may be.

DOCTOR EVIS (Secretary): If we had somebody who could tell them, "We have done it", it would help a great deal.

THE CHAIRMAN: First of all, we should be able to tell them they have to do it, and then they can find ways and means of doing it. We can have an advisor tell them how to do it.

How did you ever get permission to control the locomotives?

MR. LINSKY: It was written in the ordinance.

THE CHAIRMAN: That was all there was to it?

MR. LINSKY: Yes.

DOCTOR EVIS (Secretary): They do not have the British North America Act.

MR. LINSKY: We have nothing like that. I do not know of any city which has not that authority.

It is local policing. Just as you would not allow a fireman to stand in his cab and expose himself to whatever group of ladies might be going by.

It is a local police matter.

MR. BRANDON, Q.C.: The British North America Act is our big problem in Ontario.

MR. LINSKY: Did they pre-empt that authority?

MR. BRANDON, Q.C.: The railways are a restricted proposition, confined to the Federal government.

THE CHAIRMAN: I have often wondered if we proceeded to write a law, would it be effective?

MR. BRANDON, Q.C.: It would not hold. It is ultra vires.

MR. BOYLE: The Board of Transport Commissioners have too much to say there. They are "It".

MR. BRANDON, Q.C.: Mr. Linsky, in case of new industries coming into the city of Detroit, is your Department consulted by way of putting a stamp of approval upon the plant or industrial premises, prior to the plant being approved by your Building Department?

MR. LINSKY: Yes. In this ordinance, it is required that all plans for construction prior to the issuance of a building permit, must clear our Bureau.

MR. BRANDON, Q.C.: I suppose it is a co-ordination of expenditures, programme, and industrial

relations. Does your Smoke Abatement Department more or less control the locations and types of industry?

MR. LINSKY: Yes. If I may expand on that a little bit; actually, during the last year, we spelled out what we call our "zoning plan", which was prescribed by the City Planning Commission. It is true they still have more taxes in some kinds of areas, for example in the heavy manufacturing zone there are some industries which require the approval of the Planning Commissioner.

And the zoning is enforced by the Building Bureau of this Department.

The Building Bureau also issues the permits for the construction of the buildings.

MR. ELLIOTT: And collects a fee for that?

MR. LINSKY: Yes, and the Smoke Abatement Bureau must review these same plans with respect to smoke abatement and air pollution.

MR. ELLIOTT: Do you collect a fee also?

MR. LINSKY: I mis-quoted myself. You said, "The Building Bureau collects a fee"?

MR. ELLIOTT: Yes.

MR. LINSKY: The fee is actually collected by the Department, of which we are both parts.

MR. ELLIOTT: You get a portion of it?

MR. LINSKY: Yes.

MR. BRANDON, Q.C.: In the case of an application to amend the zoning classification, is your Department consulted in regard to that?

MR. LINSKY: Yes. That is, after the co-ordination work we have done in integration with other departments.

The City Planning Commission, which would recommend changes in zoning, has now to look on us as technical advisors with respect to air pollution, and also in his work -- of which we do some -- on any such applications.

They have many other factors, such as traffic generated in the area, future development of the entire area, and things of that sort, which they have to consider.

But they look to us for technical recommendations -- which they have always followed so far -- with respect as to how the plant should be equipped.

To give you a specific example: in one of the heavy-manufacturing zones, a company wanted to put a secondary lead-smelting plant to recover lead, and refine it. This requires specific approval of the City Planning Board, before it can be erected, even in a heavily-industrialized zone.

When he first came in, they walked him down

here, and we sat down and looked over his plans and designs, and, in fact, sent him back for a better plan for the elimination of lead fumes, sulphur dioxide and smog..

He came back with some other plans, and we worked them over a little. They came to us for formal recommendation which we returned formally, and a permit was granted.

The same thing happened with the Peerless Cement Company. They had an existing plant which had been cleaned up, after being a "stinker" for "umpteens" generations, to the tune of \$688,000 worth of equipment.

MR. ELLIOTT: They have saved money in their plant by doing that?

MR. LINSKY: No.

MR. ELLIOTT: Has it been a straight dead loss for equipment they had to put in?

MR. LINSKY: It has not quite been a "straight dead loss"; it has been an unprofitable investment.

MR. ELLIOTT: It has added to their costs, in other words?

MR. LINSKY: Yes, it is just about on the edge of adding to their costs, but they would not have put that investment in and have no return from it, if they did not have to.

MR. ELLIOTT: It was pretty close?

MR. LINSKY: Yes.

MR. ELLIOTT: They have not actually saved a great deal of money on control equipment, by having to put it in? It has made nothing for them?

MR. LINSKY: The material they reclaim just barely pays for the operation.

MR. ELLIOTT: It has added to the cost of cement, somewhat?

MR. LINSKY: To a very slight degree.

MR. BELYEA: Rather less than 1 percent.?

MR. LINSKY: Yes, less than 1 percent., I am certain.

The point is that of their own volition, they would have had to spend money in the same way as they would have had, if there had been 6 percent. or 10 percent. or 15 percent. return on the capital investment, instead of no return.

MR. ELLIOTT: In other words, the specific extra cost has been pretty well nil?

MR. LINSKY: Yes.

THE CHAIRMAN: Does that apply to most industry in your zones, where they "go along" with the by-law? Is it a break-even proposition or a losing proposition, or, in some cases, a money-making proposition?

MR. LINSKY: It varies with the industry.

There are a few cases where it showed management how to make money. This was a technical lag on the part of management. They should have known better themselves.

The first was the lead-smelting industry. It had open cokes, and they learned when they put in a bag collector, they made money.

But in most installations for the cleaning up of the black smoke -- which represents improper combustion -- it is really one-way money, with some partial recoveries, but is a loss in some cases due to the added costs for hauling away the stuff which the wind formerly carried out for free.

One of the biggest things in the city is a big hole which people can fill up for you. The Detroit Sitkey Company had a large tract just for that, and they buried the material in that hole, material which the wind formerly carried away for free.

We generally see now, when we get a rule-of-thumb in industry, they have to do smoke-control work, and are taking somewhere between 2 percent. and 5 percent. of the capital costs.

If it is a machine shop, for instance, they do not have that major problem, but when you get into chemical industries, meteorological industries, and

heavy-material-processing industries, and chemical processing, which have put a percentage of their capital investment into the plant before that, I think it would still run from 2 percent. to 5 percent.

On occasion, we have been told that to do this work will cost somewhere in the neighborhood of \$5 million. The answer we made was, "What percentage of capital investment will that represent?".

In a rare case, you may run into as high as 10 percent. or 20 percent. in some industries for air-pollution control equipment.

MR. BRANDON, Q.C.: Have you ever run into a situation where industry, by reason of being required to instal air-pollution control equipment, has been prejudiced in its operations?

MR. LINSKY: We had one company which actually moved out of town during the last seven years, where the air-pollution control equipment was a significant factor in their moving out of town.

This was a company on West Jefferson, to be specific, the Detroit Graphite Company.

They had spent considerable money in an old-fashioned way, installing old-fashioned equipment. They made good paint, but in an old-fashioned way.

The plant was one owned by a parent company.

They had to make a decision whether they would modernize the plant while installing fume control equipment, or whether to move their whole operations to another plant which they had available in Chicago, which was a modern plant.

We probably accelerated their decision to either modernize or move out, by two or three years. We do not know by how much we moved their decision forward, but there was a Board of Directors meeting which delayed the decision to some extent.

MR. ELLIOTT: How many employees were affected by that movement?

MR. LINSKY: I do not know. I think it was somewhere around fifty.

That is the only one out of \$18 million spent for air-pollution control equipment, in seven years. The one instance where they did move out, apparently our Air pollution control equipment was a significant factor, but in this case it was not the only factor, obviously.

THE CHAIRMAN: If they had a state-wide law, they could not move?

MR. LINSKY: This plant moved its operations to Chicago.

MR. BRANDON, Q.C.: In Illinois?

MR. LINSKY: Yes. They moved to a plant they already had in existence, which was a modernized plant.

MR. ELLIOTT: They moved into a plant which had done what you were expecting them to do here?

MR. LINSKY: Yes, as far as I know.

MR. BELYEA: They were probably activated more, by the thought of the \$18 million.

MR. LINSKY: That represents tax revenue. I understand Ontario would pay a personal property tax on that.

THE CHAIRMAN: On that particular point; one of the things with which we are faced is, if we introduced or recommended certain drastic laws to apply to all manufacturers, industry will say, "We are sorry, fellows", in the Metropolitan Toronto area and Hamilton or Windsor, they will say, "If you cannot co-operate, we will move".

The significant part was that the city of Windsor lost all the assessment, and the Council gets credit for "missing the boat".

What is your answer to that?

MR. LINSKY: We have had that item thrown on the table in many management conferences in the past year. They say, "If you are too tough on them, they will move out".

Our answer is that, "Where, in this country, will you move, where you will not be faced with the same things, maybe not right away, but within, say, five years?".

MR. ELLIOTT: There are some which have not met the requirements?

MR. LINSKY: Yes, and they get madder and madder about it.

THE CHAIRMAN: There is one thing upon which you might like to comment. We have heard it said that where there is smoke pouring out of the stacks, there are full lunch pails, and as long as smoke is coming out of the chimneys, everybody is happy and working hard.

MR. LINSKY: The answer is very simple, and that is that industry does not have to be bad-mannered in order to be a profitable industry.

You do not have to have a great deal of air pollution in order to have a well-functioning industry.

THE CHAIRMAN: I like that first expression, "a bad-mannered industry".

MR. LINSKY: Let me expand on that, because it is something which has received relatively little discussion in public, but, so far, has just been the subject of some cross-table conversations among us specialists.

When a community decides it is going to have industry, it also has to decide what kind of industry it is going to have.

Some of you may have read Gresham's "Law of Economics", "Bad Money Drives Good Money out of Circulation" and now, by heck, we have an amendment to Gresham, which reads, "A Bad-Mannered Industry Drives a Good-Mannered Industry out of the Area".

To point to that, you cannot have a precision machine shop anywhere near a coke oven. The particles from the coke ovens will not permit a precision machine shop nearby.

Neither could you have a cotton mill which employs hundreds of people or a dress pattern factory, or a printing and binding plant, which employs a great number of people per acre of ground, covered. Let us look at the three years during which the municipality has been quite concerned about the number of people employed and the dollars of taxable property, and we will find they are both away up.

We find a limitation of the space per acre in both cases, and these bad-mannered industries generally have a small number of people per acre.

Looking at your oil refineries, your cement plants and your steel mills; they have a relatively

large number of people per acre, and you will find the minute you put them within a mile or two of the coke ovens, you are eliminating the possibility of getting industries like machine shops, stamp mills, printing and binding, and clothing industries, and all the other clean industries. They will literally be kicked out of the area, because they cannot move alongside of them; they cannot afford it; it will interfere with their products, and they will find it harder to get employees to work for them.

Then we come to the dollars of taxable property per acre. The cost price of machines and equipment and processes of automatic screw machines and that sort of thing, is much higher than the dollars per acre of, let us say, the coke oven operations, or a cement plant.

You can get more machine equipment packed in very close, particularly in the modern automation-type plant than in one of these large extraction industries, so when the argument is thrown at you, the answer is, "No, we just do not want bad-mannered industries in there", and we feel that practically every industry can clean up if it wants to.

MR. BRANDON, Q.C.: Has there been any industry for which you could not find a suitable location?

MR. LINSKY: We have some industries where we have not found an applied engineering solution, but just pick them out of a catalogue and say, "We will not buy that".

We have three such at the present time.

MR. BRANDON, Q.C.: But, on the other hand, you believe that some construction methods can be adopted?

MR. LINSKY: We know there can.

MR. BRANDON, Q.C.: Is that because of the cost of the factory?

MR. LINSKY: In one case, dollars was not a factor. In one case, industry will spend its money. They want something which, when they "put it on the line", -- let us put it this way; management, when they spend the directors' money, do not want to have to go back and ask for more money to doctor it up. They want it done in a single operation. The securing of basic scientific information has saved, in two cases, money to the tune of over \$140,000.

MR. BRANDON, Q.C.: When was your Bureau started?

MR. LINSKY: The Bureau actually goes back to about 1911, or even to 1907. It was completely re-organized. and re-shaped, not so very long ago.

MR. BRANDON, Q.C.: How much has the corporation invested in air pollution?

MR. LINSKY: In this Bureau, it went from \$150,000 to \$175,000, just for our Bureau operations.

In addition to that, the corporation has invested sizeable money in their own plants to get them cleaned up. They still have a job to be done which is on the books, but it is on the way.

MR. BRANDON, Q.C.: Have you any idea how much industry has invested in air-pollution control?

MR. LINSKY: Industry, as opposed to apartment houses and commercial operations and municipalities, about \$15 million, which would probably break down to --

MR. BRANDON, Q.C.: You figure that \$18 million is the over-all figure?

MR. LINSKY: Yes.

MR. ELLIOTT: The municipalities contributed how much of that, including schools?

MR. LINSKY: It is figured out, but I would say, roughly, about \$1 million.

THE CHAIRMAN: What about public buildings? Are they offenders here? That is, Federally and state, and your schools; do you have any trouble with them?

MR. LINSKY: Yes, and they are more offenders than private buildings.

THE CHAIRMAN: If this building, for instance, was found to be a violator --

MR. LINSKY: It would get the same treatment.

There is only one place where they would get better consideration, and that is because we recognize they only get a budget once a year, whereas in industry, budgets are able to be established more frequently than once a year.

MR. THOMAS (Oshawa): What would be the budget of your Department?

MR. LINSKY: About \$175,000. That is for our own operations. It does not include any city department.

MR. THOMAS (Oshawa): How would that compare with the budget of 1947, for instance?

MR. LINSKY: At that time, we had three men; we now have twenty-seven.

With three men in a city of this size, you can picture what they did. They were doing what we call "running to fires". We were never getting the job done. They operated about 85 percent. on the programme, possibly, and about 15 percent. of, as I say, what we call "running to fires" or answering complaints.

MR. BELYEA: Does the present amount they receive seem adequate or not?

MR. LINSKY: That is a superfluous question.

Nobody ever has enough.

MR. BRANDON, Q.C.: What is the population of Detroit?

MR. LINSKY: About one and three-quarter million.

THE CHAIRMAN: You would like to increase your budget to \$275,000?

MR. LINSKY: We could use it to good advantage.

MR. THOMAS (Oshawa): In respect to enforcement, could you give us an idea of how much you received in fines, in enforcing the regulations last year?

MR. BRANDON, Q.C.: Do you collect any money of any kind in fines?

MR. LINSKY: The money collected in fines goes into the General Treasury and, very broadly, we only recover about 10 percent. or 15 percent. of our costs.

MR. BRANDON, Q.C.: You get paid the fee money?

MR. LINSKY: No, it does not come back in any recognizable shape.

MR. BRANDON, Q.C.: If you got more fee money, would you prosecute more?

MR. LINSKY: I do not believe so. We endeavour to induce the administrative bodies to do the jobs which

have to be done anyway.

I think to try to force them, is the wrong way. That puts it on a "cops and robbers" basis.

We have two, where, when we see them violating, they automatically go to court, because every time they violate, it puts \$500. into our pockets. That is the Demolition Wreckers, and the Scrap Trade.

MR. BRANDON, Q.C.: How many prosecutions did you institute in 1954?

MR. LINSKY: Roughly 100.

MR. BRANDON, Q.C.: When you lay an information in the courts, or institute proceedings, do you follow that through to judgment, or is it a case of after the information is laid, you give them a breathing period to clean up, and if they do, you withdraw the information?

MR. LINSKY: We no longer withdraw any court cases. Once the information is filed, we do not withdraw.

Up to three years ago, we did, and the courts encouraged it.

About three years ago, the court said, "We are tired of being 'whipping posts'. When you bring them in, we will hit them. You have had enough time to deal with them".

The courts became more strict on pressure from the community.

MR. BRANDON, Q.C.: These prosecutions you institute; are they pursuant to the provisions of your municipal by-law only?

MR. LINSKY: Yes.

MR. BRANDON, Q.C.: A while back, we were speaking in terms of your efforts for control, and were speaking about the Board of Appeals.

MR. LINSKY: Our Advisory Board has no control at all.

MR. BRANDON, Q.C.: But your Board of Appeals is a disciplinary Board?

MR. LINSKY: Yes.

MR. BRANDON, Q.C.: Then the next step is, if they desire, the offending parties can go to court?

MR. LINSKY: They can go to court to obtain an injunction against enforcement.

MR. BRANDON, Q.C.: The application to the court, to which you refer, has nothing to do with the by-law, but is something dealing with injunctions on the ground of a general nuisance?

MR. LINSKY: No, that is not quite right. The court proceeding, to which the offender can go for an injunction, is an injunction proceedings against the

municipality enforcing the by-law.

MR. BRANDON, Q.C.: As a sort of prohibition?

MR. LINSKY: Yes. That does not happen too often.

MR. BRANDON, Q.C.: Do you have any local opposition in the State of Michigan, paralleling this situation, as between residents and industry?

If industry is located in the area first, it may be a nuisance-producing industry -- but if residences creep up on the industry, their right to recover damages from industry is minimized, or cut, and in some cases negated completely.

MR. LINSKY: The right to recover damages may be minimized, but our ordinances have no connection with the right to recover. One is a criminal or a misdemeanor procedure.

So far, we have taken the position that no industry, nor anybody else, has the right to make a nuisance against a neighbor, even if the neighbor moves in later.

MR. BRANDON, Q.C.: Have you any brick plants in the Detroit area?

MR. LINSKY: We have one just outside the city limits; none in the town itself.

MR. ELLIOTT: Does it give you any trouble?

MR. LINSKY: If it does, it is a slight operation. There is no reason why a brick plant should smoke.

MR. BRANDON, Q.C.: Have you any from dynamiting the shale?

MR. LINSKY: No. We have one in the salt mine, which has given no trouble for many years.

MR. ELLIOTT: A salt mine in the city?

MR. LINSKY: Yes.

Gentlemen, Mr. George Goudean, of the Automotive Manufacturers' Association is here. If I may step aside for a few moments, Mr. Goudean will tell us what he is doing now.

I told them, Mr. Goudean, that you would speak on the hydrocarbons.

MR. MURDOCH: Just one question before we leave that last subject. How serious are the complaints about the Detroit River? Do you have many complaints coming in about the steamships? Is it considered a serious problem?

MR. LINSKY: It is considered ^{serious} certainly for about a half-mile back from the river, particularly in our non-industrial areas, starting a half a mile west of here, and going on out to the city limits, on two counts.

Firstly, the actual soot people have to wipe off their faces, and the other is the offence to the sensibilities. We are told "A ship is smoking 'billy to blazes', and yet I have had to spend my money to clean up my plant".

The third is the actual interference with visibility. On a foggy day, it becomes that much worse from the smoke from the boats, and when we get a bright day it is smoke which would not otherwise be out in the air.

We have a photographer here, and if it meets with your approval, we would like to adjourn for five minutes for the purpose of having a photograph taken.

THE CHAIRMAN: That will be fine.

---Whereupon a short recess was had, during which a photograph of the group was taken.

---Upon resuming.

MR. LINSKY: This statement will be very brief and quick, --

MR. MORNINGSTAR: You are pretty close to the city of Windsor; what co-operation do you get from the City Fathers of the city of Windsor?

MR. LINSKY: We get the very highest type, and very intimate co-operation from the city of Windsor. I wish we could get as much co-operation from the natives who have problems on this side of the river.

We have worked very closely with Mr. Boyle and we have had excellent co-operation from his department and the City Council, and as good suggestions in regard to the situation as we ever had. These were mostly when Canadian industry still had its operations running in Windsor.

The co-operation we get from "Sam" (Mr. Boyle) and his predecessor is excellent.

Right now, I think there is one big problem over there which is still on the table, and which may affect us, and which he is working on under his by-law, and that is the old Ford power plant, which has some fly ash coming from it. But they have cleaned up operation after operation, and we have had very excellent co-operation. I say this for publication, and I have said it privately many times.

THE CHAIRMAN: I understand you do have some trouble with the big Ford plant. Why is it you cannot get control over that, and get their co-operation? Do you have trouble with the Ford plant?

MR. LINSKY: You will see the Ford plant on your tour, and you can tell very quickly what comes from the Ford plant in Detroit is very obviously pollution.

THE CHAIRMAN: Is it in metropolitan Detroit?

MR. LINSKY: It is in the Detroit area. We have

no metropolitan area like Metropolitan Toronto.

I can only come to the conclusion that the city in which the Ford Rouge plant is located has not been as vigorous in their work in cleaning up the industries in their town, or getting them to clean up, as, let us say, Windsor, and Detroit. Why that should be, I do not know.

Why the Ford Motor Company has not yet chosen to get a vigorous cleaning programme going, I do not happen to know.

They have done a few things of which we know, but they are very few, and it is not what we would consider a vigorous programme. However, that may be a matter of opinion.

MR. BELYEA: How many controllable units have they?

MR. LINSKY: There are the open-hearth furnaces and their steel mill, which have been successfully controlled at the Kaiser Fontana plant in California, and the Peerless Steel works in Delaware.

That is a very obvious source of pollution. And the foundry cupolas require correction, and solutions have been found which are a little painful economically, but not disastrous.

We have our own Cadillac motor plant, which has

the latest and the largest equipment in this area.

MR. BELYEA: Our steel company says it is not practicable to control the open hearths. Going back to your percentages, would it cost 5 percent.?

MR. LINSKY: I doubt if it costs 5 percent.

MR. THOMAS (Oshawa): When you refer to the Ford Company, would you agree this would be one where a State Code would be advantageous? That is, I mean if you had a general Code applicable all over the State?

MR. LINSKY: It is only in instances where, if the local community did not choose adequate standards which could be met, then the State level could do it.

We have knocked on the door at Dearborn, which is the city in which the Ford Rouge plant is located, for such action. I intend to do that on very good authority. Mayor Cobo, the Mayor of the city of Detroit, has offered to carry the invitation directly to the folks in Dearborn. All of the communities in the down-river area got together and toured the entire area, and saw each other's problems, and at that time the Mayor said if the other communities wanted, they could use our Bureau, and if there were man-hours involved, it would be at cost, and the performance of technical work which they might feel they were not equipped to do and which work required technical knowledge,

and obviously more background and more experienced operators than perhaps the communities could furnish.

Seven years' experience has given us some of the things they may find useful, for example, practical things which are not written in the books.

DOCTOR EVIS (Secretary): Just one thing; in Canada, we have a situation where certain municipalities are virtually company-owned, and, therefore, there is a lack of control of air pollution. Could it be that Dearborn has not a vigorous air-pollution control, because it is a company-owned municipality?

MR. LINSKY: In view of the open conflicts which have shown up in years past between the administration in Dearborn and the Ford Motor Company, I do not think that situation exists. It would probably be injudicious on my part to comment, anyway.

There have been open conflicts between the city administration and the Company, so I just do not know whether it applies there.

MR. BELYEA: How much of your pollution comes from Dearborn? Is it a substantial amount?

MR. LINSKY: It is significant to those living near the border. We do not have the kind of detailed measurements in Detroit, any more than you have in any other city in any area in the country, except the

Los Angeles Basin.

That is the only area in the country -- or in the world -- to my knowledge, which has definite knowledge of how many tons go into the area, and even they have limitations, although the Basin is larger than the County itself.

MR. ELLIOTT: Do you have the backyard incinerator problem as they have? How do you handle your garbage?

MR. LINSKY: The garbage is picked up for the hog growers, The cans and bottles are picked up under the control of the rubbish people, and the other things, like grass cuttings, brush, old shoes, and other rubbish, is burned in these backyard incinerators, which is a sort of a qualified barbecue business, and all the services are provided by the community.

MR. ELLIOTT: In other words, you have no backyard incinerators here at all?

MR. LINSKY: We do have backyard incinerators for paper and cardboard when authorized by the city, but is not real trash burning.

One-seventh of the city has been cleaned up, and we got rid of the smelter fumes, which is a modern phenomena for many cities in the country.

We are now moving over the rest of the city.

This has all been done in the past year.

You have to change the habits of 400,000 families, and you do not do it overnight, without getting into an uproar.

In the instance I mentioned, we had 60,000 families' habits changed, with less than 50 complaints.

THE CHAIRMAN: As you know, this is an all-Party Committee of the Legislature, composed of members of all sides of the House, and this matter of air pollution and smoke control in our province, I think, is of interest to all Parties and transcends Party lines. Everybody wants to do a good job for the people as a whole. I think I am safe in saying that.

Now I will ask you a question as applied to Detroit. Most of us have had some municipal experience in politics. We think you are doing a terrific job, and according to those interested in this business, you are doing a big job in Detroit.

MR. LINSKY: We are more conscious of our deficiencies than anything else.

THE CHAIRMAN: I am sure there must be elected members of the Detroit Council who would probably think this whole business you are doing in this Smoke Abatement Bureau is a waste of the taxpayers' money, and the money could very well be spent in another direction.

Are there people in Detroit who feel that way about what you are doing?

MR. LINSKY: I have never heard a single expression by any member of the County Council, presently, or in any previous Council, in the past seven years, who has even hinted he felt that way about it.

We have had three Mayors since this revised ordinance came into effect, and none of them, nor any member of their staff, has ever indicated they felt that way about it.

We have had vigorous support -- some more interested than others -- but we never had anybody say this was a lot of "poppycock", or throw the needle into anybody.

There are a lot of ways of saying "We do not like it", than by saying "We do not like it". We have had no indication of that. We have gone to the County Council, and have had vigorous co-operation and support.

MR. ELLIOTT: In other words, the people have forced it, and the Councils have accepted it?

MR. LINSKY: That is your comment. I would rather not comment on it. None of our elected officials have ever, to my knowledge, used air pollution, or the air pollution Bureau, either during their campaigns or after the elections, as a matter of a political football.

Some of the members of the Council have been quite vigorous in helping us, and they have insisted on performing services for the Bureau, which have been very helpful to us.

We have never -- and this is very important -- we have never had an elected official, nor anyone representing an elected official, walk in and say, "This 'guy' is a friend of mine, and I want this violation notice taken care of". It has not happened in seven years. In some cases, it would seem to work a little disadvantageously, because the costs are applied on a great many owners of property with different kinds of temperament, and background. It is amazing.

I have known of cases where people have been talking to someone in political life, and they have been told, "Go and get this straightened out; this is not a political matter; it is a technical and administrative matter; go and get cleaned up".

We have had people walk in here, and then say, "I will see Mayor so-and-so". My predecessor would reach for the telephone, and the party would say, "What are you doing?", and my predecessor would say, "I am calling the Mayor to make an appointment for you", and the reaction would be, "Now, wait a minute".

We have had ten enquiries in seven years, where

a member of Council, or the Mayor's office has called to know what the facts were in a given situation. They had obviously got a story, and they wanted to know the facts. And not once have we ever had the request, "Well, take it easy, boys". When we have come back with the facts, they have said, "Well, I guess that is it".

That has worked very well. I should point out that it is important in this kind of thing that every elected official be given the same treatment in this matter, because if one Councilman can get a deviation simply based on friendship, that creates a similar situation with all the others; they have to get it, too.

It is all "even-Stephen deals", and in Detroit the grapevine is very, very effective, and if we deviated, or if we thought of deviating, I could look forward to a programme which would have its "guts" gone within a year. It would take about that long, or perhaps in less than a year. It would either be dead, or I would be.

MR. BELYEA: Are the incinerator manufacturers active in trying to get their domestic units into this area?

MR. LINSKY: Right now, the incinerator manufacturers are working very hard to try and reduce the standard which shall be applied to them, but come

January 1st, 1956, if the County Council passes the ordinance tomorrow night, they will try to get their units all graded to meet the standard which will be applied.

Every year, ordinance amendments go through our County Council which would remove the exemptions which exist in the ordinance, and which removes the inspection and installation provisions for fuel and refuse burners going into one or two-family homes.

This will take care of the domestic incinerator problem, because these old incinerators have been an increasing source of air pollution, what we call a "spitting-distance" nuisance.

MR. BELYEA: Have you made studies of the estimated gases here?

MR. LINSKY: To a limited degree. We have watched very carefully the intensive study made by others, because we did not have to reproduce their findings.

MR. BELYEA: Do you find it is an air-pollution problem?

MR. LINSKY: They are "spitting-distance nuisances" without question, and I refer there to these old "jalopies", and oil-burning trucks, and buses. The exhausts show up on our worst days, so far, about six hours every two years.

After two days of heavy air in our areas along our freeways, we have a mild eye irritation, not to the point of making people cry, but a tightness, when it occurs. That has been about once every two years.

We have reached the critical point now, and I might try again to introduce Mr. George Goudean.

He is the Staff Secretary, the technical engineering secretary, of the Engineering Advisory Committee of the Automobile Manufacturers' Association in particular, and the reason that is so is because there are many of these committees, but this is the one which is taking most of his time, as it is related to the theoretical combustion of products.

G E O R G E G O U D E A N ,

member, Engineering Advisory Committee, Automobile Manufacturers' Association, appearing before the Committee, but not being sworn, testifies as follows:

BY MR. LINSKY:

Q. Mr. Goudean, I am sure the Committee will be very happy to listen to anything you may have to say.

A. First of all, may I say that I am very happy to know you all. Our paths have crossed before, in that we were both in Los Angeles about the tail end of

September. I saw in the paper at that time you were there, studying this problem, and that you have been in other cities.

Mr. Linsky has told you I serve in the capacity of Secretary of the Motor Vehicle Special Committee of the Automobile Manufacturers' Association.

It is on that committee that I function as far as air pollution and "spitting-distance nuisances" -- as Mr. Linsky calls them -- from motor vehicles is concerned.

The committee was originally established in response to a considerable study which was being conducted in Los Angeles on the hydrocarbon problem, and considerably good scientific evidence that the hydrocarbon from motor vehicle exhausts, together with the Los Angeles sunshine, were combining to produce eye irritation, and crop-damage pollutants, and possibly also some of the visibility reduction.

After we had studied the problem, the industry established this Special Committee, in an effort to approach the problem co-operatively. Recognizing it was a common problem, all the manufacturers in the industry using the internal combustion engines and same type of fuel, endeavoured, as I say, to approach the problem co-operatively.

Also it was recognized it was an important subject, and we thought it should be taken out of the competitive realm, and that we should try to get something done as soon as possible.

With that beginning, this committee has endeavoured to approach the problem from a further angle. We have tried to, first, find out just exactly of what the exhaust gas is composed. We have also tried to find out what devices could be produced which would help reduce and control hydrocarbon emissions.

We also recognized that by reducing hydrocarbon emissions, we would have the basis of reducing the emissions in the vehicle.

We approached the device problem from two aspects; one, a device which might be applied to the induction system and to the vehicle, that is, the carburetion and the manifold end of the vehicle, and, secondly, a device which could be used in the exhaust system, that is, down in the muffler and the tail-pipe region.

With that in mind, we have two committees taking a look. We have all kinds of devices, and tested them in the laboratory, and we have indicated to the people in Los Angeles that before the first of 1957 we hope to have a report for them on the devices which we hope -- not "hope", but we know -- will reduce the hydrocarbon

emissions very sizeably.

The reason I say "we know" is that we will not issue the report until we have facts that a particular device will accomplish that purpose.

At that stage of the game, it will be up to the appropriate agencies in the Los Angeles area to take a look at the devices, and decide whether they are required on all vehicles in the Los Angeles area.

Concurrently, we will have to make a decision as to what we think can be done with regard to inspection procedure, and requiring the devices on cars, and so forth.

That is one problem in which we are engaged at the present time.

Another programme recommended with the co-operation of Mr. Linsky here, is to see if we can come up with some means of guiding the enforcement personnel in their determination of "unreasonable or unnecessary quantities of smoke emitting from 'jalopies', buses in poor operating condition, trucks, and so forth".

As I say, that programme is a little more recent. This has only been in operation for about six weeks now.

What we are trying to do is to see if, by photographic means, we cannot come up with some guide

which might be of assistance in trying assist the enforcement officers in determining the vehicles which are causing a nuisance.

Those, very briefly, gentlemen, are the programmes which the automobile industry is engaged in at the present time.

Both of these programmes are entirely co-operative, in that all of the automobile manufacturing companies are participating in them.

I might just note that in regard to our device programme, we have made it^a/completely co-operative effort, with everybody throwing their technical knowledge into the "kitty", and contributing their technical help and facilities where needed.

BY MR. LINSKY:

Q. Am I correct in saying there is only one other programme which has been so co-operative on the part of all the manufacturers in a similar way, and that is the seal-beam headlight?

A. Yes.

Q. In that regard, nobody "hogs" the credit; they throw everything into the pot, and come up with an answer to the problem.

A. That is right.

That is rather unique in the automobile

manufacturing companies, because you all realize it is a very competitive industry, but they have gone out of their realm in this instance, because they have recognized it is a common problem, consequently they feel it is in the public interest to get the job done as fast as they possibly can.

That, as I say, is a very brief story of a great deal of work going on.

I do not think I will say anything further, except if you have any questions to ask, I will be very happy to try and answer them for you.

THE CHAIRMAN: We have here our representative from Oshawa, which is one of the General Motors centres in Canada. Perhaps he would like to ask some questions.

Mr. Thomas, would you like to ask any questions, or make any comments?

MR. THOMAS (Oshawa): I am afraid I have not. We heard the same story in Los Angeles with respect to what the automobile industry is prepared to do, and how far they are prepared to go, and I am happy to know there is one basis upon which they can come to a common medium, respecting the seal beams.

I am afraid the same thing did not manifest itself last year when Mr. Gordon and I were members of the Highway Safety Committee, when there was a great

argument going on in regard to the safety belts, and three automobile manufacturers turned thumbs down, but this year the latest models of the Ford and Chrysler have the safety belt.

THE WITNESS: I will not attempt to comment on that. I am strictly smoke.

BY THE CHAIRMAN:

Q. What about diesels, Mr. Goudean? Are you making some headway with the fume emission from the big transports?

A. Yes. The problem of diesel smoke has been a continuing one, and every effort is being constantly made to see if we cannot do something about it.

One of the big problems is one which has been brought to light very much in Detroit, but thanks to Mr. Linsky and the D.S.R. here, the type of fuel used is a tremendous factor in whether or not a diesel will smoke.

Then the third factor is the way the operator drives the bus. You may not know too much about the D.S.R. operations here, but I think they have found how much they can reduce smoke to a reasonable minimum, by using fuel up to the manufacturers' specifications.

MR. LINSKY: That is quite true. The two cycle diesels as against the four-cycle. In common terms, the Mack, and the Common. Here the most common

is the four-cycle in this area, the G.M.C. has the most common in the district, together with the two-cycle truck motors.

The two-cycle is important, from the point of view of what kind of fuel you put in it, and the General Motors has come up with rather tight specifications for that fuel.

The four-cycle diesel can use a broader range of fuel without getting into the smoke problem.

You can take a two-cycle bus in good condition, with a driver who does not force the engine when running at low speed, but by putting in a No. 2 diesel on this, you can make it smoke beautifully.

You can use a standard No. 1 diesel oil, but when the driver tramps on the accelerator to pull away, you get a blast of heavy, bluish-grey smoke, but you take the same vehicle, and put the so-called "light No.1" diesel oil to the General Motors specifications, and you cannot see anything coming out of the tail pipe.

MR. ELLIOTT: The one you cannot see; there is just as many fumes in the exhaust you cannot see, as in the ones you can.

THE WITNESS: Not quite. There is as much gas, but it is a more stinky, offensive gas when you are not doing as good a job of burning as you can do.

Our observations have shown us that with a G.M.C. two-cycle engine with smoke, is more offensive from an odour standpoint than when it is not smoking, but there is still that characteristic sort of a kerosene odour, and that indicates you are not doing as good a burning job as you might, if they had had complete burning.

MR. ELLIOTT: Is it true that in a diesel engine, there are nine times less bad gas or gases which would cause smog, and so on, in a diesel than in an ordinary automobile?

THE WITNESS: I think you have reference to carbon monoxide.

MR. LINSKY: I have the full report that you sent out, and here it is (indicating) in the back of the report, which I will turn over to your reporter, although we can make up a page for each of you.

MR. ELLIOTT: Diesels?

MR. LINSKY: A relatively small amount --

THE CHAIRMAN: I think it might be interesting if you will turn that over to our Secretary.

MR. LINSKY: You are particularly interested in diesels. I might tell you what I told our County Council, not long ago.

MR. ELLIOTT: I will tell you what I have in mind.

In my city, we have one big steel plant which formerly had fourteen coal-burning engines running around the steel plant. Today, they have fourteen diesels, and the employees claim the gas they cannot see is harder on them than with the old coal-burning conditions. They say that their health condition is just as severe as it was with the old coal-burning locomotives. That may be only imagination, and we may have to "sell" them on that.

Could you give us anything to prove it either way?

MR. LINSKY: Here is a conclusion included in my report:

"The diesel engine emits 60 percent. less hydrocarbons than the gasoline engine. This is especially noticeable when decelerating when the diesel emits one-sixth the amount of hydrocarbons, compared with the gasoline engine."

MR. ELLIOTT: How about coal? Would there be any noticeable difference?

MR. LINSKY: I will have to sit down and make a study of that. I do not think there would be anything significant out of coal. The carbon monoxide, I am sure, is no worse in a diesel than in coal.

MR. ELLIOTT: Have these employees any argument?

Can you say they will have no argument against the black smoke?

MR. LINSKY: The two things they will get more of from diesels are the formaldehydes which relate to odour, and the one from which they feel a little eye irritation.

MR. ELLIOTT: Out of diesels?

MR. LINSKY: Hydrocarbons include some stinky ones, and you get more out of a diesel than out of a coal-firing type.

But in the coal-firing job, you are getting rid of the sulphur dioxide and the sulphur trioxide which make them cough, and again you affect them in the lungs.

I do not think any health authority would say it is a health problem, but at a nuisance level you get a little nuisance out of a stinky odour, but I am afraid they may have forgotten they get it also from coal smoke. It is like a piece of dust or getting a cinder in the eye.

If you could get one of the old ones back in again for a week -- and I would recommend that, -because you know the tooth ache which is gone, and we are inclined to forget the tooth ache which is gone, but I think if you could get one of these old engines back in

for a week, they would soon tell you which they prefer; not that the stinky one is good or desirable, and maybe it could be reduced by doing a better job of fuel burning and selection.

MR. ELLIOTT: They are working there very efficiently, and I think they can take care of that.

MR. LINSKY: They may be efficient in some things, but not in this matter.

There is one of our large bus companies, the Greyhound Bus Company, which has told us they burn a great deal of diesel oil which is a little less expensive than that burned by some other bus fleets in this area, and, as it happens, it is quite noticeable, that is, what comes out of the tail pipe.

MR. ELLIOTT: If you are following reasonably close behind them, you will notice it.

MR. LINSKY: Yes, or if one is standing on the curb.

MR. ELLIOTT: Do you feel the bus is some problem here?

MR. LINSKY: Yes, it is a "spitting-distance nuisance". That is why we proposed an amendment to our County Council, and that is why the Automobile Manufacturers' Association said, "We would like to work with you on this thing, because we would like to have

something which is workable". Detroit may be copied in this, because it is the automobile centre, and I think people assume that anything that comes out of Detroit, comes from people who know what they are doing.

THE CHAIRMAN: Are your inspectors and officers authorized to stop trucks and other vehicles in the Detroit area?

MR. LINSKY: It has never been challenged, and our inspectors have stopped trucks, but it is difficult. They are in ordinary civilian clothing, and they drive private cars, unmarked, for which they get a rental, excepting two, which has the city's seal on them, and with the support of our County Council, we contacted the Police Department about giving us a hand, and they said, "Let us amend our ordinance, so we can make it an easier enforcing job for the average patrolman without having to put him through a rigid course of training".

That is what they are working on right now.

THE CHAIRMAN: Have you ever had the suggestion in Detroit that you utilize the patrolman on the beat to act as an ex-officio smoke inspector? They are the men on the street; they know the industries intimately on their beats, and the suggestion is that they could call into the Bureau if there is an offense, and it would

be handled quickly and efficiently, and you would have men all over the city doing that.

MR. LINSKY: That specific proposition has never been put on the table before. We have a working arrangement with the Police Department concerning the illegal open fires, concerning which, on a complaint basis, the Police Department will take the calls, and make the runs.

MR. BELYEA: That idea came out of London, England, where they have the smoke pots, and an officer could just pick any of them out.

MR. LINSKY: In regard to the old households in Detroit now, there is one other probable source of pollution which is significant, and that is the refuse burners.

Coal fires are no longer a problem for two reasons; one is the fact that so many homes have converted to gas or oil, and secondly, the householder cannot buy the wrong kind of coal, because the dealers cannot import it and sell it to them.

That leaves the refuse burner as the only good problem which we are apt to run into in regard to the households. And the police have given us assistance on that.

The idea of using the police for helping us

enforce against apartment houses and industries is that our problem is not so much stopping the offender, as it is finding out what is wrong inside, in order to be able to guide the offender in what he should do. It is not a matter of simply seeing it happen.

We have only had two of the kind, where we saw the violation, and they became automatic court actions. One is in the scrap trade, and the other is the Demolition Wreckers, with a lot of expressway house re-development and slum clearance work. The slum clearance wreckers touched a match to a lot of lumber which they could burn, and which would have cost them anywhere up to \$150 to haul out of the way.

THE CHAIRMAN: Perhaps this might be a good place to recess for five minutes.

---Whereupon a short recess was had.

---Upon resuming.

MR. BOYLE: Pardon me for breaking in, but there is something, Mr. Linsky, in which I believe this Committee may be interested, and I would like to ask your opinion upon it, and that is, are these things which have specific reference to sand blasting a building? We have difficulty in that regard.

MR. LINSKY: Sand blasting a building; we have treated that up until now -- we have had illegal

industrial operations in regard to that, but dry sand blasting just is not done around Detroit any more, except on a "sneak" basis, with one exception. There are some specific kinds of cleaning which cannot be done in any other way, and in those few instances we have worked out with the sand blaster, a schedule of hours to protect the nearby streets.

In one case, they built a bridge over the street, so that those who had to use the street would not have the sand running down, requiring the cleaning up of the streets in the morning.

But in most cases, chemical cleaning can be substituted for sand blasting, but there are a few instances where the cleaning must be done by sand blasting.

MR. BOYLE: That comes under your jurisdiction, too?

MR. LINSKY: It has so far, yes.

MR. BRANDON, Q.C.: When you speak about a building demolition, such as tumbling over some wall; that will take time, and it is easier to push it over with the resulting cloud of dust.

MR. LINSKY: We had some examples of that across the street. Most of the houses across the street were old-time buildings, and to get the maximum use of the equipment, the chutes were installed, so that

the refuse dropped into a sort of a trough, and then in to the chute.

We recognized it would not be perfect, but we thought it would be over after awhile, and things would be nicer.

We took a very practical approach to that, for which we could be criticized, but that is the way we felt it could be handled at that time.

THE CHAIRMAN: Could we get on to this subject of Federal participation? Your Federal government has appropriated \$25 million to spend on air pollution?

MR. LINSKY: They have authorized it, but have not appropriated it as yet. There is a big difference. It is actually appropriating \$1 million.

THE CHAIRMAN: The Committee would be interested in finding out whether any group or individual got the Federal government to go even that far in the matter of air pollution, and if they do make that appropriation, do you expect to get some of it, and how much?

MR. LINSKY: I expect to get the benefits of it. Whether we get any in our Bureau, is a question.

What the Federal government has actually authorized and can appropriate money for -- and has appropriated much less than was first authorized -- is for research, and the dissemination of technical

findings.

THE CHAIRMAN: By whom?

MR. LINSKY: By the Federal government --

THE CHAIRMAN: No, I mean --

MR. LINSKY: Paid for by the Federal government, and some of it to be done by Federal agencies, in areas to be constructed in one way or another, and the assistance to be given by way of research grants.

THE CHAIRMAN: Are you eligible?

MR. LINSKY: If we have a specific project we want to do a research job on, and go through the red tape of getting a research grant we would be eligible for obtaining the research grant for a specific project.

THE CHAIRMAN: What moved the Federal government into taking any action in that way?

MR. LINSKY: It probably came out of the Los Angeles situation. They mentioned the community disaster situation, where a tremendously large community was tremendously disturbed by what was happening to it, and they had already spent, both in local funds and in local industrial funds, large sums of money for research.

The Los Angeles Air Pollution Control District was to decide, and had a sizeable research appropriation for finding out certain things.

THE CHAIRMAN: From the Federal government?

MR. LINSKY: No, from their own tax money -- county money.

The local industries have spent sizeable sums of money year after year for research.

That situation was perhaps the most dramatic way of bringing this need to the forefront in Washington.

In addition, there are many, many communities around the country which only knew that immediate research work had to be done -- that is, specific research work -- had to be done in an area which had not been done, in connection with the effect of air pollution on health, and to narrow it down to the effect of air pollutants on health, when you break it down from the scrap book, and pin-point it.

Practically no money had been spent on it, still, as of right now, practically no money has been spent on trying to determine the effect of air pollution on health.

THE CHAIRMAN: If it gets to the place where you are going to set up a department for research, after you got going, could you get some money?

MR. LINSKY: The city of Detroit already has had some money. The city of Detroit has, through its Health Department, been working with the International Joint Commission on research work which has been going on

in this area.

MR. BELYEA: Through Doctor Federman?

MR. LINSKY: Yes, through Doctor Federman, Doctor Anderson and Doctor Mower. They took advantage of the fact that this work was going on to see the effect of air pollution on health, but this was a sort of a "shot-gun approach" with people from the cleaner areas as against the dirtier areas.

In order to improve that study, -- although the city of Detroit has been putting money into that study for a long time -- when Federal funds became available -- and it was not \$5 million; it was less than \$1 million, and of that only a small part of it for health studies -- they went after some of that money to help in the computation work. They are using the Wayne University's high-speed computators, to find out what the data they have been collecting for five years means, and how it can be done cheaper by using these computator machines, with its computing operations, rather than it being man-power juggling comptometer and statistical machines.

That has already been done. Detroit has gotten into the act to that extent.

MR. MURDOCH: Am I right when I say that in these studies which were made in an area with several

hundred families which were covered in the survey, and recorded, they have presented an eighteen-months' progress report was publicized, but the project has another six months to run from that time, and they mentioned in their findings that there was apparently no injury to health in areas where there was much smoke and fly ash and dust, as compared with the cleaner areas.

MR. LINSKY: Yes, the illnesses and the levels of pollution in the two areas averaged out over the period; there did not seem to be a relative situation of one area against the other as far as the health of the people was concerned.

MR. MURDOCH: That is the day-to-day health?

MR. LINSKY: Yes, and averaging it over the monthly periods.

Then they went into more detail and started checking the relative dust records of the areas. Where there more people sick? The early data indicates there was some relationship when there were more pollutants in the air, or too heavy a concentration, when more people appeared to be feeling sick at that particular time.

It is a very preliminary report, but it is a further step from the report to which you referred. So the evidence is beginning to show.

One thing which is very interesting, but is not a dramatic thing, not like a whole lot of people going over"into left field"; it is something you can detect statistically. It may have to be studied over a long period of time.

It has been studied very extensively and we are planning for a long period of time ahead. Data is being examined very extensively with "statistical techniques" -- as the technical people term it -- and one of the things which has come into it is to evaluate the methods which have been used is to bring in the top people in the country to sit down in several sessions to review the studies made. They think that will be the right way of going at these studies. By doing that, it will be the first time such studies have been made in this country.

There must be better ways of doing it, and if they can be determined, then the studies can be done better the next time, here or elsewhere.

There is one thing I would like to say very quickly, unless you have some specific questions. We have not heard from the Mayor's office as yet, but I have a "quickie" on our stand on the whole question of air pollution.

THE CHAIRMAN: Before you proceed, Mr. Linsky,

I would like to take this opportunity of thanking you, Mr. Goudean, for your information, and appearing before the Committee this morning. We would be pleased to have you remain, if you care to do so, but if you have other appointments, please feel free to retire at any time.

We do thank you for the informative session we have had with you this morning.

MR. GOUDEAN: Thank you, Mr. Chairman and gentlemen.

---Mr. Goudean retired.

MR. LINSKY: I will run down two short lists.

We were talking about large dust, that is, stuff large enough to get into your eyes, and come out as cinders, which you can see. That is the larger.

The smaller dust is dust which remains in suspension for a long time, and forms part of the haze over the city. It will include some smoke and carbon particles. The large ones may be large drops, like drops of liquid, or they may be as small as just a very small spatter drop, as you might spatter a fountain pen.

MR. ELLIOTT: That would be from the chemical plants, and the oil refineries?

MR. LINSKY: Yes, it could come from the

chemical plants or the oil refineries. It does a "beautiful" job in some districts. It is in very small droplets.

Smog is made up by very small droplets. They are so small you cannot see any one of them with the naked eye, but in a cloud they give you a blue cloud -- a definite smog.

Then the last category is the gas or gases. That is a simple way for you to consider these, when people are talking about the pollutants.

We talk about the effect of air pollutants, because it is only because of the effects that we are interested in them.

Again, a very simple listing.

One effect is that it may be a black-looking soot which gets on your shirt collars, or more of a creamy white which shows up on the dining room table at the end of the day, and you can wipe it up, but it is cream coloured. So we have the ceiling effect.

Then we have the property damage, such as the painted finish on a car or on a house. These are good examples of corrosion.

Then we have the vegetable damage, and the fluoride operations, like the aluminum smelters, or where we have a flux in the material, and it spreads out

on the vegetation,

There is a large group around the aluminum smelter in the northwest portion, which the aluminum people call the "fluoride farmers", because they make more money out of damage claims than out of cattle. That may be a "snide" remark.

MR. BRANDON, Q.C.: Have you had any vegetation damage claims in the Detroit area up to the present?

MR. LINSKY: We had two forms of very extensive study of vegetation damage, one to find out what was happening to the vegetation around the district.

We had good people, some from the University of Michigan, and then the International Joint Commission sub-committee staff, and we had Doctor Coe from your Harrow Experimental Station, people from Windsor, including Mr. Boyle, and others from Windsor, such as your Parks people, participating in it, and the Windsor laboratory had a representative, and Doctor Cave from the International Joint Commission.

On our side, we had our local forestry people and some very good agricultural people.

We covered the whole area, and we very quickly found there was no generalized damage, but we did find a regression or slowing down of growth.

We did find within "spitting distance" of the

shadow of some particular chemical operation.

In one of the plants down river, they had a spill of chlorine resulting from an accident in the plant, which wiped out the vegetation for four or five blocks. It all occurred within five minutes, but it recovered in about six weeks. However, the cucumbers and other things did not recover.

We did not find the hydrocarbon of typical smog damage they talk about in Los Angeles. We tried to get some indication of the damage out there, but again it was all in the shadow of a particular plant.

This last spring, I received a complaint from one of the householders in the east side of Detroit, and it turned out to be some escaping iodine from a chemical operation, and it was causing the same kind of damage that chloride had caused.

Does that cover the point?

MR. BRANDON, Q.C.: Yes, thank you.

MR. LINSKY: These "nuisances" by which I mean offensive odours to people, the irritating of their nasal passages and eyes, and sky darkening, and view impairment -- you just cannot see as far. Those two are a little different. In Los Angeles, they say you cannot see the San Gabriel mountains any more.

The last is the Health Department.

It has helped me, and our staff, in talking to groups, to get these two lists on the table, and then you can talk about any particular situation, and you can nail it down.

For instance, if we were talking about nitrogen sulphite, which is the stuff which makes rotten eggs smell rotten. It will darken lead paint. It is a gas and it has to be in the presence of some water to blacken the lead paint. It is a very odorous and dangerous gas, but you can smell it before it gets near being dangerous.

It will cause vegetation damage in concentration.

It has been of great help to us when we used these two kinds of lists.

If we are talking about "small dust" and "large dust", it gives the creamy-coloured appearance and damages property in the sense that it will be abrasive, and be sky darkening and view impairing, when in cloud form.

As a matter of fact, you can find these lists useful when going from one thing to another, and it has the tendency to keep you from getting too general.

So when we talk about pollutants, we like to ascertain, if we possibly can, what they will do.

It is just that simple, and I think these lists

provide a simplified way of finding these things out.

THE CHAIRMAN: It is always easy when you find it out.

MR. LINSKY: Yes.

THE CHAIRMAN: Mr. Linsky, you have been talking now for about three hours, and I think that is long enough. I think we will call this off at this time, unless somebody has some further questions.

MR. BOYLE: We have had great co-operation from the railways in connection with the ferries. They have changed over from coal to oil equipment in the last few weeks. That is part of the programme we have had.

This particular railway which operates these ferries has just been changed over.

We had them in court on one occasion, but by reason of the fact that they made certain promises, we withdrew the charges, and this is the result.

THE CHAIRMAN: Are they all co-operating?

MR. BOYLE: Yes.

MR. ELLIOTT: That is in Windsor?

MR. BOYLE: Yes. You will hear further on that.

MR. LINSKY: I would like to present to you the people whom you are going to meet.

First, is Mr. Tomlinson, my assistant. However,

he will not be with us this afternoon. I would like you to look upon him as being available at any time he can be of help to you.

This is a two-way street. We get information and ideas, as much as we give them.

Mr. Tomlinson is my assistant, and if I am not here, he will be available to you at any time.

Then I would like to present Mr. Deneve, one of our supervising engineers. He will be with us on our trips. He probably will not be in the bus with us, but he will be in a car which has a radio telephone, so if anybody gets lost -- which we hope will not happen -- he will be available at once.

I am glad to say that the Mayor will see us now. If we will go to the eleventh floor, we can meet the Mayor, and then come back here, before going to the bus.

---At 12:10 o'clock p.m., the further proceedings of this Committee adjourned to reconvene in the office of Mayor A. E. Cobo, of the City of Detroit.

All members of the Committee were in attendance, with the same appearances as heretofore noted.

THE CHAIRMAN: How do you look on air pollution?

MAYOR COBO: I do not know as yet, specifically. I would like to see the air clean. Of course, that is what you are trying to do. We have gone quite a ways in that respect, and in other ways, too.

For instance, we have here a system whereby instead of just washing our streets and washing the dirt to the side, we pick it up and then wash it, so all the dirt is not brought back into the roadway.

We are working on our incinerator, and have been experimenting with that, and we have installed a large grinder for garbage, which we have put into our incinerator plant, which has a capacity of 30 tons per hour.

The purpose of grinding the garbage is to put it down the sewers, rather than burning it, and putting the fumes into the air. Mr. Linsky watches that very closely.

We are re-building one of our incinerators, and we thought we could burn more rubbish, and also stop the particles from going up into the air, and I think we will be using that process very soon.

MR. LINSKY: That is correct. This new design is being tried out just now, and will be in operation next week. It is just too late for you to watch it in operation.

MAYOR COBO: We had a grinder working in an experimental way, one which we got from another place.

MR. LINSKY: That is "Ted" Winkler's own design, and he is one of our most competent men. He is

engaged now with a new type of stoker in place of the hand-stoked grates in this tremendous incinerator, which has a capacity of 100 tons per day.

MAYOR COBO: I am sure you know what industry is doing here. The river situation bothers us. There is no denying that. Sometimes I feel a little discouraged when I look out the window, and see the amount of smoke that is coming up.

THE CHAIRMAN: That will increase with the Seaway.

MAYOR COBO: Yes, it will, unless something is done.

MR. LINSKY: The International Joint Commission in Ottawa in October promised they would have a recommendation in the hands of Parliament after their coming meeting.

In our talk downstairs, the Chairman of the Ontario group thought he might well send a representative to this particular meeting of the International Joint Commission, to support Detroit and Windsor.

MAYOR COBO: There does not seem to be a complete understanding, such as there has been in connection with other matters.

MR. ELLIOTT: Is the garbage grinder plant not in operation?

MAYOR COBO: The grinder was put in, but we took it down, because it was borrowed from Dearborn. The capacity was not large enough, so we are getting a larger one.

MR. ELLIOTT: Does it not go into the river?

MAYOR COBO: No, we sent it down to the disposal plant.

MR. ELLIOTT: How about metals and tin cans?

MAYOR COBO: They are picked up with a magnet. It is a beautiful job. When it is operating, the stuff goes through it like sawdust.

MR. ELLIOTT: The sewage disposal plant will clean everything.

MAYOR COBO: We are trying to make this a garbage-free city. We are asking the people to put garbage grinders into their houses.

I think there are seven grinder companies in here, and they got together and went into these areas, to find out the different types of installations which would be required.

They advised us to change our Code and simplify it, and the cost of installation has been simplified.

MR. ELLIOTT: How does the cost compare with the old burning operation?

MAYOR COBO: They are comparatively new. They

are not advanced enough for that.

We have fifteen hundred tons of garbage in a day, and one grinder can handle that, 240 tons in eight hours.

Yesterday, we asked for specifications for a second one.

If you speed up the burning of rubbish, it will have a good effect on our air.

Further, it will save us considerable money in hauling, because we have to pay considerable for dumping and long-distance hauling.

MR. ELLIOTT: Do you separate garbage from glass, or other material of that sort? In other words, do you throw the glass out? How do you handle that?

MR. LINSKY: They get some on the gravity drop. Some of the bottles are just ground up and go down as grit, and it causes no trouble at all. They are just picked up along with the other grit.

MAYOR COBO: We hope to have the larger one in operation soon. Parts are on the way now.

Possibly, just by the way, while most of the parts are bought, the actual operation was designed here. We looked at the one in Deaborn, but we did not think it would work out.

MR. ELLIOTT: Grinders are working in other cities?

MAYOR COBO: Dearborn has tried it out.

Perhaps you should get in touch with Mr. Palmer, who designed the whole thing. They are experimenting now in the operation, and it has extended so far as to provide studies on the definite needs, and as to how it might be improved.

Between the companies, the garbage grinder in the homes is being advocated in news articles, and around the Council table now, and we estimate that it will be so equipped that with a grinder, instead of an incinerator, we will have made a step forward.

MR. ELLIOTT: I think you would have to have a sewage disposal plant alongside of the grinder.

MR. LINSKY: The grinder is so set that it is on the ground close by.

MR. ELLIOTT: The grinder would be no good without a sewage disposal plant. Both must go together.

MAYOR COBO: We may have to enlarge that, but we only get 15 percent. solids out of it.

THE CHAIRMAN: How will this help the air situation?

MAYOR COBO: We think when you burn garbage and put it in the air, you are bound to have that which makes it impure air.

If you could double burn the gas, that is different,

but when burning it in an incinerator, the gas goes out into the air.

MR. LINSKY: And it is very hard to clean.

MAYOR COBO: We feel if we grind it, and put it down the sewers, that will eliminate any going into the air.

MR. ELLIOTT: Has Los Angeles copied that?

MR. LINSKY: They do not have the rubbish pick-up at all. They are trying what they hope will be a workable scheme, with land fill. They have a great many deserts and canyons which can stand filling.

MAYOR COBO: The incinerator people have been "on our necks" as you might expect, and as a result the industries have developed, or are developing, a better method of burning the gas. I saw a demonstration of it the other day, and it was pretty good. They have a development in the incinerators, therefore, they will have both, instead of only one, which can be used.

THE CHAIRMAN: I think, Mr. Mayor, we have taken enough of your valuable time. We have certainly enjoyed speaking with you.

It is almost lunch time, and I would like to say on behalf of the Committee, "Thank you for taking the time to welcome us to your great city", and we will depart right now, so that you may carry on your other

duties.

MAYOR COBO: Fine. We are glad you came in.

THE CHAIRMAN: You have a great man in Mr. Linsky. He seems to know all the answers.

MAYOR COBO: We feel that with the installation of the garbage grinder, and perhaps some other steps we may take, we will be getting someplace.

MR. MURDOCH: I think we can see through the windows across the Detroit River.

MAYOR COBO: We will appreciate anything you can say about the river.

THE CHAIRMAN: We were very pleased to hear of the close co-operation between Detroit and Windsor.

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---Whereupon the further proceedings of this Committee adjourned to the Engineers Club for luncheon.

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L U N C H E O N

---At the Engineers Club, in the city of Detroit, at
12:45 o'clock, p.m.

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PRESENT:

Mr. A. H. Cowling,	Toastmaster,
	Presiding.
Messrs. Morningstar,	
Elliott,	
Brandon, Q.C.,	
Murdoch,	
Thomas (Oshawa),	
Gordon,	
Hon. Mr. Kelly,	
Dr. Frederick Evis,	Secretary.

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APPEARANCES:

Mr. Harry Belyea,	Industrial Hygiene Branch, Ontario Department of Health.
Mr. Ben. Linsky,	Chief, Smoke Abatement Bureau, City of Detroit, Michigan.
Mr. Jerry DeNeve,	Detroit, Michigan.
Mr. Tomlinson,	Assistant Chief, Smoke Abatement Bureau, Detroit, Michigan.
Mr. Samuel Boyle,	Chief Smoke Inspector, City of Windsor, Ontario.

Mr. Garrett, Smoke Inspector,
City of Windsor, Ontario.

Mr. George Gaudaen, Air Pollution Committee,
Automobile Manufacturers'
Association, Detroit,
Michigan.

Mr. Del A. Smith, City Councillor, City of
Detroit.

Mr. H. E. Mistelo, Member of the Advisory Board
of the City of Detroit.

Mrs. L. A. Edwards, Member of the Advisory Board,
City of Detroit.

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THE TOASTMASTER: Ladies and gentlemen, I will ask you to rise and I will ask Mr. Gordon, the Member for Brantford, on our Committee, if he will pronounce the invocation.

MR. GORDON: Lord, we ask Thy blessing upon
this food, and we thank Thee for it. Bless it to our
use.

Amen.

---Whereupon luncheon was served.

THE TOASTMASTER: Mrs. Edwards and gentlemen, if we can carry on with out coffee, we might do so. Some of our special guests have to leave early and that is why we have had these little informal chats.

We are pleased and honoured to have with us today Councillor Smith of the City of Detroit.

For the benefit of our members, may I say that in Detroit, they have a Mayor and nine Councilmen, although I understand that two are ladies. These are elected at large; they do not represent wards or ridings, as we know them.

They are elected for a four-year term, and that is quite a thing, which we do not have at home. Most of our centres are still settling on a one-year basis, and I think the people of Detroit are to be congratulated upon extending such a term of office to their municipal representatives, because all of us, who have been active municipally, know that it requires a considerable length of time to familiarize oneself with local affairs, and to be there long enough to get something done.

Councillor Smith has favoured us with his presence here today, and I would like to call upon him for a word at this time.

MR. D. A. SMITH: Thank you, Mr. Toastmaster, and Mrs. Edwards, and gentlemen; I am naturally very happy and quite exultant about the privilege of appearing here, and to discuss with you some of the common problems which our cities and municipalities -- and indeed, nations, states and provinces -- are facing, and I think this response on the part of this fine group from our neighboring

community across the river, is indicative of the high type of interest in the direction of the great work that is being done here, not only by the Smoke Abatement experts, under the direction of Mr. Linsky, for whom I have a very high regard, but his entire Bureau of which he is a member, and I think there is no problem which concerns this Nation, nor the Dominion of Canada which is more important than this, what has been regarded as a common problem, and it is nice to see our own here today joining hands cordially and very firmly with our neighbors, which, to my mind, is a guarantee there will be no separation of the fine friendships which have been formed in regard to this particular problem, which I think is of great importance.

After Mr. Linsky spoke to me, I did not have time to make any prepared address, as I did not expect to be called upon, but on behalf of the Mayor and the civic administration, we felt there should be a representative here, and I am glad to have been invited here to represent the city.

I do not think I can better express myself today than to repeat what I wrote in 1944, when speaking on the subject of "Courage".

I was speaking about the late "Al" Smith, Governor of New York State, where I said:

"Courage would suggest that the cleavage between folks will disappear when each one recognizes the science, skill, metal and accumulated knowledge which although possessed by just a few, presents the gift to many."

With that recognition, there should be no cooling of our courage, and our convictions in the face of the necessity for doing those things which will make for a better world in which to live.

I think one of the most important things which concerns us today, perhaps even as important as air pollution, is the water situation with which we are faced at the present time.

We read about the natural precipitation, but we know, according to the statistics, that the signs of precipitation we knew back about a quarter of a century or a half a century ago are not true today, and we know that such a precious thing as water -- which is the most precious commodity of which we know, and one of the most vital necessities -- is diminishing, but a great many people do not realize it as yet, but even today more people are awakening to the fact that there is a diminishing supply of water, because the population of this country, according again to those who are dealing with vital statistics, will, within the next forty-five years, in order to keep pace with all the expansion and

all the scientific devices which will involve more machinery and more plants, and more people, it will be necessary for us to do a lot of things we never dreamed of a few years ago.

For instance, today we see the lamprey eel investing our waters, and has become more noticeable than ever in our great inland lakes.

I called the attention of our State Game Department many years ago to the fact that the lamprey was investing the waters, and I do hope that our sister country and this country will do something about them, and that should be done just as quickly as possible, and a great deal can be done by co-operation.

I might cite one instance. Are you able to work without any interference on the part of a legislative body, or are the Bureaus which are equipped, and have the skill and science to do these things, interfered with by a legislative body?

Let me say to you that the nine members of the County Council -- and this goes for the Mayor as well -- in no way interfere with the Bureau of Mr. Linsky, who very ably heads it.

On the other hand, we do have complaints coming to us, and we think we are being "put on the spot".

We do not believe there is any necessity for

interference, as far as Mr. Linsky is concerned. If anyone complains to us about the water, we say to them, "Do you feel there is necessity for purifying the water of this Nation?". If he says, "Yes, we think that is alright", then we say, "Would you care to submit to something which would bring about the purifying of the water, if you were contributing to the contamination?". And the answer might be, "Yes, we think we would". Then we say, "If you are willing to do that, you must recognize that is necessary, then certainly you are able and are willing to accept the philosophy of Mr. Linsky, and say very effectively whether or not you 'go along with it', and will do what you can to abate the smoke nuisance and lessen the pollution of our atmosphere".

I would say, "You look at it from that standpoint", and they say, "I guess maybe we would like to do it". Then I would say, "Why not discuss it with Mr. Linsky and his staff? They are very fine gentlemen, and are working in a good cause; do what you can to make this a better world in which to live. Go back now and make it possible to work with him, and do what you can to help him, rather than protest and feel that a legislative body should do something about it".

We have many problems which can be identified. We find now exactly the same attitude on the part of many

manufacturers and nations and provinces, and the administrative forces thereof, who are willing to do exactly the pioneering work we imagined twenty-five years ago.

At that time, the newspaper men were doing an excellent job. I can think of "Jack" VanCouver, and other press men, Mr. Gillan of the Detroit Times and "Jack" Senuben, and Mr. Kimball, who were all doing a masterful job. Mr. VanCouver was a pioneer in the field of air pollution, and if we recognize what they have done, we will have no trouble in getting other agencies to assist in this work. We have some of the finest institutions in the world, and I am sure we will have no trouble in soliciting their assistance, insofar as they can give it. Nor do I think we will have one bit of trouble in having the same enthusiasm today as there was a quarter of a century ago across this great country.

Mr. Toastmaster, it is nice to be here, and to be identified and associated with such a fine group of people who are trying to do something about what appears to be one of our most important problems, and I thank you.

THE TOASTMASTER: Thank you, Councillor Smith. I understand you wanted to get away at two o'clock, and it will be perfectly in order for you to leave right now. ---Councillor Smith retires.

THE TOASTMASTER: We have Mr. Mistale, who is on the Advisory Board of the Smoke Abatement Bureau, and who represents the coal industry in the Detroit area, and I would like to call upon him for a few words right now.

I understand Mr. Mistale has been on this Advisory Board for some time, and is one of the original members, having been on it since 1947.

MR. MISTALE: Mr. Toastmaster, ladies and gentlemen; we have learned a great many things here on this Board, and I think I can say in front of our Chairman that the coal people are not as bad as we thought they were in the beginning.

I do not think anyone in the city worked harder than I did to avoid the Smoke Abatement regulations, and I do not think anyone has learned more about smoke abatement than I. Do not misunderstand me. I want to qualify that statement a little.

This city has really been cleaned up. Some of the professional men who came before the Council or before the people who had charged of putting these regulations into effect -- some of the things they told us we found out were just as true today as they ever were.

That is all I have to say, except one thing, Mr. Toastmaster.

When you got up today and asked a member of your Committee to give thanks, I appreciated that very much. It made me think of those who went over to Geneva, that if they would invite Christ to sit at the peace table, that they would have been helped thereby, and would have made it a real peace table, as an International Board, such as you gentlemen coming down here.

I want to thank you for bringing that thought up. I really appreciate it. (Applause).

THE TOASTMASTER: Thank you, sir.

Now, these gatherings are always made better when we have a lady present, at least it keeps certain people from using a certain kind of language, but it is very delightful to have a lady present for many other reasons.

We have Mrs. Edwards with us. She is a lady member of the Advisory Board of the city of Detroit on Air Pollution and Smoke, and is also one of the original members of that Board.

I have had a very nice chat with Mrs. Edwards. She is a very keen lady in many ways, and her status on this Advisory Board is representing the public at large, so that she speaks with great backing, and it is a privilege to introduce her at this time.

It gives me pleasure to introduce to you, Mrs. L. A. Edwards of the Advisory Board of the city of Detroit. (Applause).

MRS. EDWARDS: Thank you, Mr. Toastmaster.

All of the things which men think about, by way of public improvements, affect women, too. There was a time when men did all the policy making, and all the talking -- in good or bad language -- but there came a time here in our own state where the women decided that they, too, would have a voice in policy making, and at the time I was appointed, three Mayors ago, to this Board, when we were just getting started, I was associated with a very active group of women.

This group represented about 100,000 in the state, and our major purpose was to see that the women did have a place in making the policies of the commissions and committees in the State of Michigan. I can say, too, as I have said to your Toastmaster, that I think it is recognized today as a very fundamental thing. You can read the papers, and almost never will you read a list of people for anything whatsoever, that there are not women's names included in the list, and women's institutes represented.

It took a strong push to make the Powers-that-be at that time realize that women were very much

interested, and also qualified, even to making the Governors or the Mayors find women they could appoint.

I remember one day Governor Kelly said to me, "You go home and find me some people to appoint".

And there was only one instance where we could not find a woman engineer for some specific appointment. Now, we would have no difficulty at all.

I would like to say that women are curious and are interested, and have taken over offices and are doing a great many of these civic activities, and I think the best message I can leave with you is when you go home, if you do not have women on your civic affairs committees, see to it that some are placed there. (Applause).

THE TOASTMASTER: Thank you, Mrs. Edwards. I can assure you we have some very active Canadian ladies on our committees, advisory and otherwise, and do not let it ever be said that the women do not get in their share of talking. I am thinking especially of my wife. She talks more than all of the other ladies on the street.

It was very nice having you with us here today.

I will not ask Mr. Linsky to say anything. He has been speaking all morning.

I will not ask the hon. Minister (Mr. Kelly) to say anything, although it is always nice to hear from him.

We will hear from "Sam" Boyle tomorrow, so I will not call upon him at this time, but I would like to call on our fine, big, jovial friend from Welland, Mr. Ellis Morningstar, to say a word or two on behalf of the Committee. (Applause).

MR. MORNINGSTAR: Lady and gentlemen; I would rather sing a song anytime than make a speech.

I can assure you the different speakers have expressed my sentiments one hundred percent. in what they have said here today.

I think it is very nice to see representatives from both sides of the Border having luncheon together. In some countries, they have erected walls between them, so that the representatives of different countries cannot see each other, but here in the United States and Canada, we build bridges across our rivers so we can visit each other and break bread together.

I am sure I am expressing the sentiment of the Committee here when I say we are certainly enjoying ourselves in the United States, and I know that we will enjoy ourselves more as time goes on.

We have been very pleased this morning to receive

this very, very valuable information from Mr. Linsky and his staff. I can assure him we appreciate it, and we appreciate he and his staff taking their valuable time to give such good information to this Committee, which information, I am sure, will be passed on, as the Chairman knows, to the Legislatures on each side of the border.

I am sure that everyone here is very anxious to put these things into law, as Mr. Smith has said, for human betterment, and I am sure we are all striving along those lines today.

I know that time is passing, but I do want to express the thanks and appreciation on behalf of this Committee to Mr. Linsky and his staff for giving us the wonderful advice they have. I am sure we appreciate it very, very much, and I hope we will have the pleasure of coming back at some time in the near future, and meeting Mr. Linsky and his staff again on some other occasion.

Thank you very much.(Applause).

THE TOASTMASTER: That ends this delightful "get together". The luncheon is adjourned.

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---Whereupon, at 2:15 of the clock p.m., the further proceedings of this Committee adjourned to reconvene immediately for a tour around the city of Detroit.

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APPENDIX "A"

REPORT TO DETROIT COMMON COUNCIL ON EMISSION OF ODOR,
SMOKE, GAS, ETC. FROM DIESEL-ENGINED COACHES.

By Benjamin Linsky, P.E.
Chief, Smoke Abatement Bureau.

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A. INTRODUCTION

This report is based on three types of
information:

1. Reviews of technical literature on the subject.
2. Discussions with specialists in engine design,
engine maintenance, fuels and lubricants, and air
pollution. These discussions have extended over the
past 7 years and were brought up to date during the
Air Pollution Control Association conference in May
in Detroit and by telephone roundup during the past
few days.
3. Direct observations by the staff of the Smoke
Abatement Bureau.

B. BUSES ON DETROIT STREETS NOW

The latest figures from the DSR show they
now operate the following buses:

GASOLINE:

- 748 "Transit" buses with Continental engines.
- 134 "White" buses with their own engines.
- 307 "Twin-Fageol" buses with their own engines.
- 330 "Mack" buses with their own engines.

DIESEL:

220 "GMC" buses with 2-cycle GM Diesel engines.

The other bus companies also use a variety of buses with different types of gasoline and Diesel engines.

C. VISIBLE SMOKE FROM BUSES

There is no valid excuse for visible smoke (black, grey, blue, or white) from any bus -- or any other automotive vehicle on the streets.

Smoke results only from improper engine maintenance, improper engine adjustment, or improper fuel.

1. GASOLINE QUALITY

Gasoline is now a fairly well standardized product and is, according to automotive engineers, rarely a cause of smoke.

2. DIESEL FUEL OIL QUALITY

Diesel fuel oil is available, generally, in several grades. The cheaper grades and the grades that are cheaper to use, according to automotive engineers, can cause smoke even when the engine is in good repair and is properly adjusted.

Appendix A is a copy of the Diesel fuel oil specifications recommended by GMC for their Diesel engines.

Appendix B is a copy of the Diesel fuel oil specifications used by the DSR and the Detroit Purchasing Department.

It will be noted that the written DSR specifications are equal to those of GMC except with regard to Sulphur and Residual Carbon. Actual deliveries, however, show by analysis that both Sulphur and Residual Carbon have been running well within the GMC specifications.

(During recent inquiries it has come to our attention that other bus operators are using different Diesel fuel oil specifications. The visible smoke from these other buses is probably related to the quality of the fuel oil they buy. This matter will be taken up with them as part of the Vehicle Fume Abatement Program being worked up by the Police Department and our Bureau now, as reported earlier this month).

3. PROPANE.

Reports indicate that propane, when used as a fuel in suitably designed engines and buses, eliminates all smoke, even with poor maintenance, but this has not been verified by our Bureau.

4. ENGINE MAINTENANCE.

Because the maintenance and adjustment of gasoline carburetors, diesel fuel injectors, ignition

systems, pistons, piston rings, cylinders, and valves is so vital to prevent visible smoke, we asked the DSR on June 6, 1955, to print the following specific check-off item on their Driver's Write-Up Card:

SMOKING EXHAUST

We also asked that DSR Operations supervisors be instructed to turn in reports on smoky buses whenever they observed them. We have been assured this would be done to expedite service attention to this item.

5. GENERAL

It should be pointed out that smoking gasoline buses usually put out more visible smoke when slowing down (decelerating) whereas smoking diesel buses usually put out more visible smoke when speeding up (accelerating). These differences are characteristic of basic engine designs.

It should also be pointed out that most laymen do not recognize the difference between smoking gasoline buses and smoking diesel buses and frequently confuse the two. Since none of the smoke is excusable, this confusion is probably not too important.

It should also be pointed out that when an engine (gasoline or Diesel) is first started, and for a few minutes until it warms up, some visible

is usually emitted even when all maintenance, adjustment, and fuel factors are good. This is also true of passenger cars.

The question of using vertical exhaust stacks instead of horizontal exhausts has been investigated. Until scale, condensate, etc. can be eliminated from exhausts, especially after prolonged idling, we cannot recommend vertical exhausts without considerable reservations for either Diesel or gasoline coaches.

D. ODORS FROM BUSES.

The odors from buses are usually associated in people's minds with visible smoke from these buses. This is because more odorous gases are usually emitted when smoke is being emitted because of poor engine maintenance, poor engine adjustment or, in the case of Diesels, improper fuel. Even when there is no visible smoke, however, odorous gases are emitted.

These odorous gases are produced in greater quantities:

By Diesels when speeding up

By gasoline engines when slowing down
even when the engines are in perfect adjustment using the most proper fuels.

I. DIESEL BUS ODORS.

It is the experience of many people that

the odors from properly operated 2 cycle Diesel engines are noticeable but not objectionable, especially to riders in the bus itself. The odorous Diesel exhaust gases, along with the blast of hot gases when the bus pulls away from the curb or stop light gives an increased odor sensation to people in the car behind.

Proper engine maintenance, proper engine adjustment, and proper Diesel fuel oil use are all important in reducing Diesel exhaust odors from existing engines.

Limited observations by our Bureau showed some odor from even the newest GMC Diesel buses on Jefferson. It was especially strong when there was gray smoke that indicated something wrong with the engine.

Continuous, and current, improvements in the design of 2 cycle GMC Diesel engines are reported to reduce the quantities of odorous gases exhausted. As older models of these engines receive periodic major rebuilding, it is general policy to incorporate these changes to improve the older engines.

Several types of water and chemical scrubbers and after-burners (with and without catalysts) have been designed for Diesel engine exhausts to reduce

odorous exhaust gases. Not one of these is yet in general use on public streets, although there have been some uses in special areas, such as in mines. The maintenance and operating costs and technical troubles are probably the primary reasons these accessories have not been fully developed and installed. The automobile industry is now expending more effort on such technically difficult and expensive accessories because of the public demand.

(It should be noted that the automobile industry did not do too much about producing quieter bus and truck mufflers as standard items, until public opinion demanded it of the operators, which resulted in legislative inquiry and action.)

2. GASOLINE BUS ODORS.

It is the experience of most people that the odors from properly operated gasoline engines are not as noticeable or objectionable as Diesel exhaust odors to the people in the car behind, but this may be due to familiarity with gasoline exhaust odors as well as to some confusion as to whether or not a bus is gasoline or Diesel powered. However, because of the nature of the gas line engine that produces more odorous gases when the bus slows down, the riders in the bus, especially those in the rear,

find the gasoline exhaust odors noticeable, and, in many cases objectionable, when the windows are open and there is a tail wind that blows the exhaust cloud in the windows.

Proper engine maintenance and adjustment reduce the general odorous gas exhaust, but the volumes of odorous gases while "slowing-down" are not greatly reduced by this method.

One accessory has been developed and used, called a "degasser valve". This valve reduces the vacuum on the intake manifold and thus reduces the flow of gasoline from the carburetor while the bus slows down. The Fageol engines incorporated it, but because of lack of general demand by the public until recently, the expense of adding it and maintaining it kept the automotive industry from incorporating such a device generally. At the present moment, the entire automotive industry is working on this particular approach as a means of greatly reducing total hydrocarbon emission (over 50% of the total) and other odorous gases.

3. GENERAL

There has been some technical work done recently and currently on the measurement of odor in engine exhaust gases. This is difficult

technically because there is no exact instrument for measuring odors. (All such instruments have a nose at the end of the instrument, which makes it difficult to obtain uniform measurements).

At the recent meeting of the Air Pollution Control Association we were informed that New York City is holding a formal hearing to determine whether to require "degassing" valves on all present and new gasoline buses. We are, of course, following their findings with great interest, because normally it would take about 18 to 24 months before such a device or provision would be incorporated in new gasoline engines for passenger and commercial use.

E. GASES FROM BUSES.

What we have said, above, about odors is applicable to some extent to other gases besides the formaldehyde and other aldehydes that are associated with odorous exhausts. The Health Department will supplement this discussion as to the effects of exhaust gases, particularly as they relate to the health of people.

In discussing gases we should distinguish between two broad problems:

1. "area-wide" air pollution, related to the effect of the exhaust gases on a large area of the city.

2. Localized or "spitting distance" air pollution, related to the people riding in a bus, those in cars following a bus, and the people walking, working or living close to a bus line.

1. AREA-WIDE EFFECT

Because the exhaust gases from buses are such a small percentage of the total exhaust gases from all motor vehicles, it is our opinion, based on present knowledge, that the effects from either Diesel or gasoline buses are not significant in area-wide air pollution. This opinion is shared by air pollution specialists in other parts of the country, even in Los Angeles where the worst area-wide problem exists because of terrain and weather.

2. LOCALIZED EFFECTS.

In the exhausts from buses, the following gases are probably of greatest concern and interest in and near the bus, before great dilution takes place:

Formaldehyde and other aldehydes	Associated with odor nuisance from exhausts.
Carbon monoxide	Odorless
Hydrocarbons	Mild odor from exhausts. Reacts with other gases, especially in sunlight, to form Los Angeles type smog with eye irritation and crop damage..
Oxides of Nitrogen	Mild odor from exhausts. Reacts with hydrocarbons, especially in sunlight, to form Los Angeles type smog.

Lead compounds

Sulphur oxides Mild odor from exhausts.

The Diesel engine emits only about $\frac{1}{100}$ as much carbon monoxide as does the gasoline engine.

The Diesel engine emits no lead compounds.

The Diesel engine emits 40% more oxides of nitrogen than the gasoline engine. This is especially noticeable when pulling away from the curb or a stop light.

The Diesel engine emits 40% more formaldehyde than the gasoline engine, except when decelerating.

The Diesel engine emits 60% less hydrocarbons than the gasoline engine. This is especially noticeable when decelerating when the Diesel emits $\frac{1}{6}$ the amount of hydrocarbons compared with the gasoline engine.

We enclose a copy of a technical paper, "Composition of Exhaust Gases from Diesel, LPG, and Gasoline Powered Motor Coaches" by Elliott, Nebel, and Rounds, presented at the Air Pollution Control Association meeting in Detroit on May 25, 1955, as the source of some of the above information.

During 1953 and 1954, studies of the effects of air pollutants on vegetation were carried on in the area. No vegetation damage was found that could

be related to automotive exhausts, even in areas of heaviest traffic. A special effort was made to detect the Los Angeles type of hydrocarbon smog damage, but it was not found, even in such areas as the Washington Boulevard parkway.

CONCLUSION.

1. The problem of visible smoke from Diesel buses is one of maintenance and fuel specification. Because the DSR purchases proper Diesel fuel, any visible smoke is attributable only to maintenance. Because many people believe mistakenly that most of the DSR buses are Diesels, and because some of the other bus and truck operators have been using improper Diesel fuel, there is a general impression that all Diesel buses emit visible smoke. In our opinion there is no advantage or disadvantage between Diesel buses and gasoline buses with respect to visible smoke.
2. The problem of odor from Diesel buses is to a considerable extent one of maintenance and fuel specification. Even with proper maintenance and proper Diesel fuel, there is a distinctive odor associated with the Diesel exhaust. This is especially noticeable during acceleration, as when pulling away from the curb or a stop light, but is also found when idling and cruising. This is usually more disturbing to

those outside the bus itself.

The gasoline bus emits even more formaldehyde and hydrocarbons when slowing down. This is probably more disturbing to those in the bus, especially in the summer when bus windows are open. New developments in "degasser valves" may further improve gasoline buses in this respect.

The odor from a Diesel bus is different than the odor from a gasoline bus.

3. The problem of gases from either Diesel or gasoline buses is not significant from an area-wide viewpoint, in our opinion. The localized "spitting distance" effect is one primarily for Health Department determination.

It seems to us to be obvious that carbon monoxide and lead compounds are not significant from Diesel buses. Hydrocarbons are less from Diesels than from gasoline buses, although new developments of "degasser valves" may reverse this advantage. Whether the other gases (including formaldehyde, oxides of nitrogen, oxides of sulphur, and carbon dioxide) have been found to be significantly higher from Diesel buses than from gasoline buses, or whether any or several of them are considered to affect the health of bus riders or those who walk, work or

live near bus operations is a subject that we look to the Health Department for determination.

No detrimental effect on vegetation was found during studies of this phase during the past two years.

4. Propane powered buses have been reported to be freer of smoke and odor problems than Diesel and gasoline buses. We have not verified this by observation of Bureau personnel. The limited technical literature indicates that there is less formaldehyde from propane buses. With respect to the other gases, they produce no lead compounds, and are reported to stand in between gasoline and Diesel buses with respect to the emission of carbon monoxide, oxides of nitrogen, and hydrocarbons.

5. The automotive industry is currently engaged in a large research and development program to reduce undesirable engine exhaust gases. While this will be productive in due time, now all motor vehicles emit characteristic odorous gases. Large vehicles, such as buses, are more disturbing than small vehicles because the size of the "blast" is larger.

ABSTRACT

THE DETROIT AIR POLLUTION CONTROL PROGRAM

By Benjamin Linsky,
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Dept. of Buildings & Safety
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Detroit, Michigan.

Detroit's Bureau of Smoke Inspection and Abatement is misnamed, even though the public's primary complaints are against the sky-darkening effects of smoke from the misburning of coal, and against the dirty, abrasive action of cinder and fly ash. Our present program was established in 1947 (before Donora) when a committee from the Engineering Society of Detroit, at the request of the Commissioner of Detroit's Department of Buildings and Safety Engineering, wrote a comprehensive air pollution control ordinance replacing Detroit's old Smoke Abatement Ordinance. When this was enacted, almost without change in its technical aspects, the Bureau was reorganized on an engineering control basis.

The staff consists of three engineering administrators and supervisors, seventeen air pollution inspectors, five office personnel, and two chemists who are classified as industrial hygienists and work out of the Detroit Health Department's Industrial Hygiene Laboratory.

The Bureau enforces the Ordinance by obtaining compliance, utilizing punishment in the courts only as an incentive for recalcitrants. The Bureau's philosophy is that when a case must be carried into court, the Bureau has failed to "sell" the requirements of the community to the violator.

One administrative method that has aroused considerable interest in controlling visible air pollution is our use of an observor in one of several high buildings who dispatches two radio-telephone equipped automobiles manned by Air Pollution Inspectors. The purpose is not just to "write a violation ticket" but to observe the causes of excessive air pollution while the causes are active. The cars are also dispatched when citizens report that excessive pollution by smoke, dust, fumes, or gases is going on "right now". This saves many hours of waiting for pollution episodes to recur.

The Bureau performs stack sampling when it is necessary to evaluate air pollution emissions at the source.

The Bureau measures ground concentrations of pollutants for two general purposes. One is to evaluate the need in a specific neighborhood for corrective work from a specific point source. The

second purpose is to determine the area-wide concentrations of pollutants in order to correlate them with various kinds of effects. This latter work is now tied in with the Detroit River Area study of the International Joint Commission.

The Bureau has been successful in persuading local industries and city departments operating large plants to engage in research and development work when no technical answers to specific air pollution emissions are known.

The results of the Bureau's work are measured subjectively and objectively (The difficulties in obtaining objective measurements are well known). On a dollar basis, about \$14,000,000 has been spent for installations of direct air pollution control equipment in five years. This sum is for corrections required by violation notices from the Bureau. It does not include the large number of equipment changes made without our knowledge where installation permits were not required. Horizontal visibility, in the absence of rain, fog, snow, or sleet, has increased noticeably. Dust-fall in industrial areas was reduced. A total of more than 140,000 tons of fly ash a year is now being caught in fly ash collectors. Large tonnages of chemical and other dusts are also

being caught. Industrial gases, such as hydrogen sulfide and hydro-fluorosylicic acid have been reduced in quantities emitted.

The Bureau has noted several improvements subjectively. Smoking chimneys are fewer and less frequent. A white shirt can be worn a full day and to dinner now, whereas five years ago it was not possible without embarrassment. Fly ash does not accumulate along curbs and in store doorways, as it did previously.

The Bureau itself engages in limited research work, when no industrial sponsorship can be obtained. Right now we are studying apartment house flue-fed incinerators. In co-operation with the Department of Health's Division of Industrial Hygiene, our Bureau works on improved air pollution instrumentation.

The Bureau freely exchanges ideas with other air pollution specialists in public agencies and in private industry wherever they are located.

The Bureau utilizes every available channel for education in the community. For example, the film we presented here was produced by the Detroit Department of Parks and Recreation for initial showing over WWJ-TV in Detroit. For those who may wish to

carry on a similar project, it should be noted that it is a 16 mm silent film, shot and played back at sound-speed to meet television requirements. The narration was live. The total expense was low. This film has been presented before several community groups of different types -- neighborhood associations, service clubs, and technical societies, among others.

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APPENDIX "C"REPORT ON CONTEMPLATED MEASURES FOR PURIFYING
THE AIR IN DETROIT

Submitted by: The Department of
Buildings and Safety
Engineering.

The following measures are planned for purifying the air in Detroit, within the limits of available budgets. There are several Bills before Congress now that offer the possibility of furnishing localities such as ours with Federal funds for educational, engineering, and enforcement work. There are also several Federal Bills being considered that would subsidize local air pollution studies and other research as to the nature of air pollutants and their effects. Some Federal funds are already being employed in connection with the International Joint Commission's Detroit River area study of the effects of air pollution,

A. Our Smoke Abatement Bureau will continue along present lines of engineering, education, and enforcement against all forms of illegal air pollution, from all sources, large and small, as has been reported in our Annual Report. We also enlist the co-operation of other public service agencies to increase the effectiveness of our

program. These agencies include the Fire, Police, Health, Planning and Zoning Appeal Departments, as well as the other Bureaus in our own Department -- Building, Plumbing, Electrical, Safety Engineering and the Testing laboratory.

The co-operation and compliance of operating agencies is obtained in the same manner as from private property owners and operators, except that budget limitations sometimes show the compliance. These agencies include the Public Lighting Commission, Water Board, Department of Public Works, Board of Education, County and State Highway Commissions, Parks and Recreation, and the other "owning and operating" agencies.

The range of sources of air pollution our program covers includes:

1. Surfaces -- Parking lots, playgrounds, streets, piles of stored bulk materials.
2. Vehicles -- Railroad engines, motor vehicle exhausts, ships at dockside, truck cargoes.
3. Chimneys -- serving furnaces, boilers, incinerators.
4. Exhaust ventilation vents, stacks, and other openings -- serving all types of industrial and commercial operations, including metal

processing, chemical processing, petroleum processing, fabric processing, food processing, etc.

5. Outdoor operations -- including construction, demolition, material handling, and refuse burning.

B. We obtain measurements of various dusts and gases at the sources and in the neighborhoods where problems may arise in order to correlate causes and effects so we can obtain correction of the causes and ascertain that requirements are being met. We also obtain such measurements for general background information to guide our program of work. We utilize our own personnel and equipment and encourage other interested agencies to do similar work of measuring air pollutants and their effects for our mutual use and guidance. These other agencies include the Detroit Departments of Health, Parks and Recreation, Public Works, and Water; the related County and State agencies; the Universities and other research agencies in the area; Federal agencies such as the Weather Bureau and the United States Public Health Service; and the International Joint Commission, in addition to related Windsor, Ontario, and Canadian Government agencies.

- C. Recent information from engineers in the auto industry points out that any visible smoke and fumes from gasoline or diesel engines can be attributable only to either improper engine maintenance and adjustment, or to the use of improper grades of fuel. As soon as agreement can be reached on how to rule out clouds of visible water vapor during cold, humid weather when the engine has not yet warmed up, we should be able to proceed with a program to eliminate all smoking diesels and "oil-burning jalopies" under threat of quick penalty. It will be necessary to review the Motor Vehicle Code, and Traffic Court and Police Department procedures to obtain a smooth-working method for apprehending and prosecuting violators. When this has been worked out, an educational campaign can be initiated that should greatly reduce the need for much court enforcement activity. Chapter 325, Section 44, Paragraph C of the 1954 Compiled Ordinance apparently furnishes adequate legal authority.
- D. New developments in incinerators, including those serving apartment houses and commercial users, have brought into being fly-ash washers and fume after-burners, We are obtaining the economic data on them now, so that we can be certain that engineering designs

are suitable and workable. After-burners are well tested now, but their combination with fly-ash washers in apartment house flue-fed incinerators is relatively new. These measures should materially reduce the air-borne dirt and odors in apartment house neighborhoods. You have already learned of the fly ash washers being installed in the municipal incinerators. The corrosion problems associated with them are now being worked out. They are definitely effective in reducing nuisance fly ash. Domestic incinerators are being worked on by the gas and gas appliance industry while we are completing our proposed regulations for two types -- (1) trash burners for papers and cardboard only and (2) garbage and cloth burning incinerators with suitable fume-burners.

- E. You are familiar with the drum-removal program. It is hoped that the program can be accelerated to complete the coverage of the city in 18 months. This program results in eliminating backyard garbage burning with the accompanying odors and smoke, and is being carried on through close co-operation with other city departments, including the Department of Public Works and the Health Department.

- F. It has been found, by experience, that it is very difficult to keep caretakers and janitors, such as are employed in apartment houses, properly trained to handle hand-fired coal burning boilers and hot water heaters without excessive smoke. We are therefore accelerating the program of urging building owners to install stokers or other automatic fuel-burning equipment when we observe smoke violations. Only in this way can we, practically, avoid having large numbers of smoke violations year after year, especially in the Fall.
- G. Out-of-town sources of air pollution, especially the large steel mills, chemical plants, foundries, etc., obviously add to Detroit's air pollution. This is especially true in the smaller particles of dust, very small droplets, and gases that travel long distances before settling out. It seems that some of these out-of-town sources are being enlarged faster than they are being cleaned up. As Detroit's own sources are being reduced (some of them slowly because of major technical problems) it becomes more and more evident that the out-of-town sources are important.
- At the present writing, the thinking of our community leaders has apparently brought agreement on the

following points:

1. Air pollution control must extend to major sources outside Detroit.
2. THE DEGREE OF CONTROL SHOULD BE AS NEARLY EQUAL AS POSSIBLE TO MINIMIZE COMPETITIVE DISADVANTAGES DUE TO AIR POLLUTION CONTROL COSTS OF INDUSTRIES.
3. The air pollution control enforcement agency (or agencies) should be directed and staffed by technically competent persons.
4. The lines of authority and responsibility should be as clear-cut as possible, with due recognition of the over-lapping broad responsibilities of building safety, fire prevention, health, planning, and police agencies.
5. THE AIR POLLUTION CONTROL ENFORCEMENT AGENCY (OR AGENCIES) SHOULD BE SAFEGUARDED AGAINST POLITICAL INTERFERENCE TO THE MAXIMUM DEGREE.

The question seems to be, now, "Exactly how should it be done?"

The legal and administrative possibilities are many.

Because our Bureau has, for several years, furnished a limited amount of free technical assistance, to neighboring communities on special problems and in helping train their personnel, Mayor Cobo has

suggested that our Bureau could be contracted with to provide more extensive technical assistance (including field inspection and measurement work, review of engineering designs, etc.) by one or more of our neighboring communities. If there were a uniform law adopted by all of the communities or by the County, this could readily be accomplished. The law could cover either the large operations only, or, as in Detroit, it could cover both the large sources that affect large areas and the small sources of air pollution that cause localized nuisances.

It should be emphasized at this time that the large sources of large quantities of fine dust and very small droplets that originate out-of-town are obvious polluters of our atmosphere now, requiring no study to recognize their obvious effects, and should be undergoing clean-up during the period when studies are conducted of the less obvious effects, such as health.

- H. The Detroit Air Pollution Control Ordinance 167-E lacks a clear-cut provision for the control of cream, blue, and other light and dark colored plumes of small dust and very small droplets. In some instances these plumes meet the weight concentration limits of the Ordinance, but still form a visibly undesirable

condition in the nearby area, and add to the haze over the city. The Bureau is studying the problem of how to place workable legal controls over this form of air pollution. There is, as yet, no nationally standardized legal procedure for this problem, as there is for light and dark colored gray and black smoke plumes and concentrations of large dust and fly ash.

- I. The most obvious smoke-pall from leaf burning in the fall, every year, and the requirement that the leaves be disposed of to prevent sewer blocking and slippery streets, is recognized as a serious problem, both as a nuisance in the air, a hazard to traffic, and, for some people, a detriment to health. In co-operation with the Departments of Public Works and Parks and Recreation, we are studying methods of handling this problem. One way is to have the DPW pick up leaves. Another is to encourage the use of power-motored leaf shredders that put the leaf shreds back into the lawn. (This is being done successfully at some of the large parks and cemeteries). There is a possibility that the king-size garbage grinder now being tried out may be used in combination with city leaf-pickup. As a temporary expedient to improve the smoke pall until

a better program can be worked out completely,
it would be advisable to limit the hours of the
day if people are allowed to burn leaves this Fall.
By having them burned only in the late morning
and early afternoon, such as from 10 a.m. to 3 p.m.,
we would have the advantage of better wind conditions
to disperse the smoke out of the city.

Submitted by:

Benjamin Linsky,
Chief Smoke Inspector,
Smoke Abatement Bureau.

Authorized:

Jos. P. Wolff, Commissioner,
Department of Buildings and Safety Engineering,

June 1, 1955.

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APPENDIX "D"

THE RELATIONSHIP BETWEEN AIR POLLUTION, PLANNING
AND ZONING

By Benjamin Linsky*
Chief Smoke Inspector,
Bureau of Smoke Inspection and
Abatement,
Department of Buildings and
Safety Engineering,
City of Detroit, and
Member, Industrial Division-Land
Use Committee,
Detroit Metropolitan Area
Regional Planning Commission.

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This discussion will cover only a few points.
It is intended to be stimulating, rather than definitive.

First, that air pollution is a major factor
in the planning work that is reflected in zoning.

Second, that air pollution control agencies,
by working closely with planning agencies and zoning
enforcement agencies, can increase the effectiveness
of their service to their communities.

Third, that different levels of different
kinds of air pollution have different legal status.

Fourth, that the new concept of Performance
Zoning, as opposed to Specification Zoning, poses a
challenge to air pollution control engineers.

These four points will, in some degree, be
illustrated by experiences in and around the City of
Detroit.

It is certainly not necessary to define the words in the title of this paper. But, in order to clearly distinguish the terms, it might be mentioned that Zoning is one of the tools produced by Planning. It is the tool which establishes public, legislative, limitations on the use of land. A further distinction is that zoning violations are usually enforced by government agencies through criminal courts, whereas Private Restriction violations are usually interpreted and enforced by private persons through civil courts.

Planning includes the process of studying the wishes and resources of the people, services and properties of a community or area and the development and promulgation of patterns of action that appear, to the planners, to be needed by the community or area.

Air Pollution is considered to be any man-made, unwanted, contamination of the atmosphere.

In the process of Planning, it is well recognized that one of the reasons why residences and some industries should not be too close to each other is that some industries have either not learned how, or have not been accustomed to controlling their air pollution. For the same reasons, it is recognized that some types of industries should not be too close to other types of industries.

(It is easy to recognize that a coke oven battery should not be close to a precision machine shop. The uncontrolled sulphurous gases and coke dust are detrimental to the machinery and production of a precision machine shop). It is apparent that when good air pollution control enforcement work is done, the conflict between industrial and residential property use is minimized.

The terrain, prevailing winds and air stability are factors governing the dispersion of atmosphere contaminants that should be considered by planners in establishing patterns for the zoning of land.

At the present time the Detroit Metropolitan Area Regional Planning Commission is completing the design of a Master Land Use Plan for an area comprising 3-1/2 counties. Although the heavy extractive industries, such as cement plants and steel mills, must, of necessity be located along the waterfront, upwind from the Detroit area in the prevailing wind direction (the worst position, from a pollution dispersion viewpoint), full consideration has been given to the air pollution factor in planning an isolation of this heaviest industry area, as well as other industrial areas. Residential areas are planned to be upwind from these other industrial areas in the region, well buffered by non-residential areas from the next upwind industrial areas. In the

Detroit area, fortunately, winds other than the prevailing Southwestern, are quite brisk and generally free of deep temperature inversions.

The Detroit City Plan Commission is considering the redevelopment of a part of the city called Corktown, which is a very old, mixed occupy section in the heart of the city. This Commission in carrying out the policy of Mayor Albert E. Cobo has been planning to restrict the new land use in this section to those industries which will not affect each other or the downwind heart of Detroit with air pollution. Thus such clean trades as clothing manufacture, precision machinery and printing can find comfortable plant locations.

The agencies that carry out the work of air pollution control, planning, and zoning enforcement can, by working cooperatively, make each other's work easier and more effective, with less confusion to land users. The Detroit Smoke Abatement Bureau has, for several years past, deliberately and conscientiously sought the aid of, and furnished technical assistance to the related agencies. We have membership on the Land Use Committee of the Detroit Metropolitan Area Regional Planning Commission, and thus guide the air pollution considerations of meteorology as well as

specific questions such as how far away from a cement making plant housing should be required to stay.

(This concept that industry should be protected against encroaching residences is gaining wide acceptance).

Similarly, the Smoke Abatement Bureau furnishes technical recommendations to the Detroit City Plan Commission to assist them in determining what special restrictions they will place when granting permission for certain special kinds of land use, such as junk yards, smelters, and acid plants.

Further, the Smoke Abatement Bureau works closely with the Building Inspection Bureau of the Department of Buildings and Safety Engineering, which enforces the Zoning Ordinance. Several times, the Smoke Abatement Bureau has found that air pollution violators emitting excessive dusts, gases or fumes, were carrying on industrial operations that were prohibited by zoning, but had not yet been caught up with by the Building inspection Bureau. Similarly, the Building Bureau has referred new air pollution problems to the Smoke Abatement Bureau.

One more agency, the Detroit Board of Zoning Appeals, utilizes data from the Smoke Abatement Bureau to guide its decisions where air pollution is a factor. The Appeal Board refers the air pollution problems it

learns about in its public hearings to the Smoke Abatement Bureau. The Zoning Appeals Board has the authority to permit nonconforming land uses to be extended, if the result is not detrimental to the neighborhood. Sound air pollution information is helpful in guiding some of these decisions. For example, the question was asked whether dust from a buffing and polishing operation could be controlled so it would not be nuisance to an adjacent home. The answer was available from the Smoke Abatement Bureau.

Just as there are different degrees of air pollution, as well as different kinds of air pollutants, there are different legal considerations of pair pollution. While this discussion is not definitive it can be pointed out that a pollutant may be detectable, detrimental, and/or a violation of an air pollution law. This can be illustrated by considering Hydrogen Sulfide. At extremely low concentrations, the odor is detectable. If this barely detectable concentration occurs several times a week, it would probably be considered detrimental to a residential neighborhood, whereas if it occurs only a few times a year, it may not be detrimental to a residential neighborhood. The significance of the phrase "detrimental" is that many zoning control agencies are

required to consider proposed land usage and to prohibit a proposed usage if it is judged to have a detrimental effect on a neighborhood. As to violation of an air pollution law, emissions of Hydrogen Sulfide would violate Detroit's ordinance if it caused property damage (such as darkening lead base house paints) or caused illness (and H_2S is a very dangerous gas), or was offensive (and in Detroit, offensiveness of an odor is determined by having several Bureau members make relatively unbiased determinations).

The fourth point to be covered is the concept of Performance Zoning versus Specification Zoning. In Specification Zoning, it is customary to control land use by listing specific types of industries that can and that cannot use a specific plot of land. Thus slaughter houses, rendering plants, fertilizer plants and asphalt refinery plants are usually relegated to the remotest pieces of land, whereas bakeries, dry cleaning plants, and plating plants are usually permitted near residences. From an Air Pollution Control Engineer's viewpoint, such specified distinctions are arbitrary and out-of-date. For example, a poorly maintained dry cleaning plant can emit odors that are offensive for blocks, whereas a modern rendering plant, with proper controls, can operate so that it is

undetectable 200 feet downwind. The newer concept of Performance Zoning being developed by O'Gara, Williams and others, proposes that industrial land use be restricted on the basis of how well it can control its troublesome aspects. Thus a plant, regardless of what it produced, would be permitted to occupy a given site as long as it did not emit more than X smoke, Y dust and Z gases (so far as air pollution is concerned). It might be permitted to occupy another site, closer to residences, if it emitted $1/2$ X smoke, $1/2$ Y dust, and $1/2$ Z gases. In effect, the Zoning Ordinance can contain air pollution control provisions which vary with the neighborhood. This raises a challenge to air pollution control engineers to learn and publish more about the specific effects of special concentrations of specific pollutants, and to learn and publish more about the relationships between location of the source of emission, emission velocities, mass rate of emission, physical characteristics of emissions, micrometeorology, and concentrations at various distances.

The Planning and Zoning authorities have indicated that it would be more equitable to regulate land use by spelling out what performance specifications an industry should meet with respect to its neighbors.

At the present time, such performance specifications must include the broad judgment phrases like "offensive, unclean, etc."

In summary, I have not been definitive, but have attempted to discuss four propositions:

1. AIR POLLUTION IS A MAJOR FACTOR IN PLANNING AND ZONING.
2. AIR POLLUTION CONTROL AGENCIES, BY WORKING WITH PLANNING AND ZONING CONTROL AGENCIES, CAN INCREASE EACH OTHER'S EFFECTIVENESS FOR THE COMMUNITY.
3. THERE IS A DIFFERENT LEGAL STATUS FOR DIFFERENT LEVELS OF DIFFERENT AIR POLLUTANTS - DETECTABLE, DETRIMENTAL, AND VIOLATIONS OF AIR POLLUTION LAW.
4. PERFORMANCE ZONING IS MORE RATIONAL THAN SPECIFICATION ZONING, BUT REQUIRES A HIGHER ORDER OF TECHNICAL SKILL BY AIR POLLUTION CONTROL SPECIALISTS.

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APPENDIX "E"

GENERAL ASPECTS OF THE DETROIT-WINDSOR AIR
POLLUTION STUDY

by Benjamin Linsky, P.E.
Smoke Abatement Bureau,
Department of Buildings and
Safety Engineering,
Detroit, Michigan.

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INTRODUCTION

The task of setting down in formal words a current summation of the Detroit River Area Air Pollution Study commonly called the Detroit-Windsor Study, is a formidable one, especially because of the fact that the writer-speaker and his employing agency have been closely enmeshed in every phase of the study in varying capacities, ranging from active planning and direction to interested onlooker at different times in different subdivisions of the study.

The task is further complicated by the large number of official agencies at all levels of Government involved, and the varying liaison and operating relations between them as organizations, policy, and personnel changes have occurred during a period of six years.

The task is still further made difficult by the existence of a large number of both officials reports and technical and general papers arising out of

the study written by individual participants and groups of participants. Each represents and interprets the primary data in his own way or in a manner concurred in by a few of the other persons associated in the Study. The differences in interpretation and terminology have continued to remain unresolved in a significant number of instances.

The following axioms are presented for possible future use in helping the development of postulates regarding air pollution:

1. You can find almost any kind of material you look for in the air at any location in the world if your sample is large enough and your methods of identification are sufficiently sensitive.
2. Any of the materials in the air can be toxic to people if the concentrations are high enough, long enough.
3. Any of the materials in the air can cause economic loss if the concentrations are high enough, long enough.
4. The identification of materials found in the air, and the quantitative determination of their concentration in the air, are without meaning unless they are related to levels of effects on people and/or things and/or activities.

5. A method of sampling and/or analysis has no meaning unless its absolute limitations are described, or unless its arbitrary design and operation produce values that have been related to specific levels of effects on people, things or activities.
6. The infinite number of kinds of human and natural activity that introduce material into the air and transform materials in the air from one form to another requires that any statement about the source of any material in the air be made with circumspection.
7. The influence of recent weather on the concentrations of materials recently introduced into the air is so great that reports of air pollution concentrations should be accompanied by weather descriptions if they are to be most useful in describing any location's pollutant levels.
8. Because the use of generic terms does not usually lead to specific knowledge, the term "air pollution" should, whenever possible, be replaced by the term "air pollutants". This may lead more speakers and listeners to particularize their discussions.
9. Statistically sound analytical techniques are essential in the treatment of data if nonsense correlations are to be avoided.

Had the above axioms been followed by all

who participated in the Detroit-Windsor Study there would probably be fewer differences between the participants.

BACKGROUND

The Detroit-Windsor area is flat land with a river running between the two cities. The river contains the International Boundary Line. The area, which includes other communities, contains of the world's greatest concentrations of industry. The concentration is increasing, with new steel mills and added chemical and petroleum refining output.

In 1947, Detroit revised its Smoke Abatement Ordinance to establish a comprehensive air pollution control program with a staff on an engineering control basis.

In the Detroit River area, the communities on both sides of the River have been cooperating closely in many kinds of problem situations, including air pollution, for many years without bothering the state, provincial or federal governments, except where necessary because of legal and legislative requirements. Detroit, Michigan, in the United States of America, and Windsor, Ontario, in the Dominion of Canada, especially, have had intimate friendly relationships for many years.

With respect to the land-based air pollution control work, their programs are remarkably parallel. There has long been a free interchange of information, ideas, and personnel training. There have been a very few trans-boundary air pollution complaints between the two cities, all of which were handled with dispatch and were given at least as high an administrative priority as similar complaints from persons within each of the two cities in recent years.

Detroit air pollution control personnel have for years met with Windsor air pollution personnel in in-service training sessions. They exchanged visits to interesting control equipment installations. They even discussed and developed joint administrative plans for curbing the excessive air pollution from some roving offenders, such as the railroad car ferries that operate in both cities.

When Detroit's air pollution control program was revitalized and modernized in 1947, the expanded Bureau found that the one class and source of undesirable air pollution that could not be reached by available government entities was the smoke and fly-ash from ships plying the Detroit River. This international waterway was a legal no-man's land without practical legal jurisdiction available.

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Detroit's efforts to obtain voluntary co-operation from the ship owners failed. The Detroit Smoke Abatement Bureau arranged matters so that the city and some of its neighboring communities went to the United States Department of State in 1948 so that the International Joint Commission would be asked to recommend legal procedures to the United States and Canada for their consideration and adoption so that ship-smoke and fly-ash could be controlled.

While this single-purpose request was being processed, the City forwarded a second request that the effects of air pollution from other sources, especially land-based industries, be looked into. The exact origin of this second request is obscure and has been attributed variously to the Canadian Government, the United States Public Health Service, and/or an individual who believed that it would be an easier way to obtain effective control of air pollution from large industries by overcoming local political considerations both inside and outside the Detroit City limits.

The basic document, known generally as the Reference on Detroit River Air Pollution, was issued as follows by the United States Department of State in 1949:

REFERENCE

January 12, 1949

United States Section
International Joint Commission
Washington 25, D.C.

Sirs:

I have the honor to inform you that representations have been made to the Governments of the United States and Canada to the effect that the air in the vicinity of the cities of Detroit and Windsor on both sides of the international boundary in the area of the Detroit River, is being polluted by the discharge of smoke, soot and fly ash, in quantities sufficient to be detrimental to the citizens of both countries in this area. It has further been represented to the two Governments that vessels passing through the Detroit River are a source of this pollution. Pursuant to the provisions of Article IX of the Boundary Waters Treaty, signed January 11th, 1909, the two Governments have agreed to a joint Reference of this matter to the International Joint Commission. The Commission is requested to inquire into, and to report to the two governments upon the following questions:

1. Is the air over, and in the vicinity of, the cities of Detroit and Windsor, on either side of the International boundary, being polluted

by smoke, soot, fly ash or other impurities, in quantities detrimental to the public health, safety or general welfare of the citizens, or to property interests on either side of the International boundary line?

2. If the foregoing question, or any part thereof, is answered in the affirmative, to what extent are vessels plying the waters of the Detroit River, or any of them, contributing to this pollution; what other major factors are responsible and to what extent?
3. If the Commission should find that vessels plying the waters of the Detroit River, or any of them, are responsible for air pollution to an extent detrimental to the public health, safety or general welfare of the citizens, or to the property interests on either side of the international boundary line,
 - (a) what preventive or remedial measures would, in its judgment, be most practical from the economic, sanitary and other points of view?
 - (b) what would be the probable cost of such measures?
 - (c) by whom should cost be borne?

For the purpose of assisting the Commission in

making the investigations and recommendations provided for in this Reference, the two governments, upon request, will make available to the Commission the services of engineers and other specially qualified personnel of their respective Governments, and such information and technical data as may have been acquired by such Governments or as may be acquired by them during the course of the investigation.

The Commission should submit its report and recommendations to the two Governments as soon as practicable.

Very truly yours,

Robert A. Lovett
Acting Secretary of State,

(The Canadian Government issued a Reference that contained identical writing except for one unexplained difference. The last question in the United States version is missing from the Canadian Version. It is the hope of the author that this minor difference will not delay final action by the International Joint Commission.)

One might rephrase this Reference by stating that the Commission is charged with finding out if there is detrimental air pollution in the area. If detrimental air pollution is found, the Commission is charged with finding out the amount from the ships

and the amount from other~~y~~major factors. Finally, if the ships cause detrimental air pollution, the Commission is charged with recommending practical corrective steps, reporting on their probable cost, and recommending who should pay the cost.

THE STUDY

The development of the area-wide study program of "all effects from all pollutants from all sources" was an interesting surprise to the originators of the simple request that smoke and fly ash from ships plying the Detroit River be cleaned up.

The study seemed to offer an opportunity for obtaining useful information, locally, at Federal expense, so many of the communities joined in. The Canadian Government appropriated adequate funds but the United States did not. The local communities, especially Detroit, therefore began to perform and pay for most of the work of the study in the United States.

The enterprise has received different degrees and methods of management, varying between tight and loose, centralized and decentralized, authoritarian and cooperative. Some of these variations were observed to be related to the availability of managerial manpower time, other variations appeared to be related

to the changing primary interests of the management manpower, still other variations appeared to be related to the sources and availability of machines, money and manpower skills.

The formal organization starts with an International Joint Commission. Each of the two components, Canadian and United States, has a clerical staff and legal assistance. Each component, Canadian and United States, appoints a Technical Advisory Board (and Board Chairman) to devise and direct technical studies. The two Technical Advisory Boards also comprise a Joint Technical Advisory Board that meets in order to plan studies, and appraise and report on the meaning of the results, to the International Joint Commission. Each component of the Technical Advisory Board, Canadian and United States, also reports separately to its component of the International Joint Commission.

It appears that the Canadian organization has operated to a larger degree in a centralized, tight, authoritarian manner than has the United States organization in devising and carrying out air samplings, laboratory analyses, and weather observations. This can be attributed to the fact that Canada appropriated more money and full time manpower for this work than did the United States. The Canadian Technical

Advisory Board has also had fewer changes in its makeup than has the United States Board.

The United States Technical Advisory Board obtained a large part of its air samplings and other field information from the City of Detroit as a result of cooperative planning of some of the phases and studies. The Bureau of Smoke Inspection and Abatement of the Department of Buildings and Safety Engineering participated in the planning and execution of almost all of the cooperative studies except the State of Michigan's rural St. Clair River Area Study. The Detroit Health Department participated in the planning of most of the cooperative studies and took the leadership in the Health Effects Study and the Detroit Department of Parks and Recreation similarly took the leadership of the Vegetation Effects Study upon the recommendation of the Smoke Abatement Bureau to the City of Detroit. The Cities of Wyandotte, Michigan, and Windsor, Ontario, also participated in the planning and execution of the cooperative studies. The assistance of other City of Detroit departments, Wayne County agencies, State of Michigan and university groups, and private industries, as well as Federal agencies, has also been utilized in some phases of planning and some phases of execution of some of the studies of

the total enterprise.

The United States Technical Advisory Board has operated in a centralized, tight, authoritarian manner, equal to that of the Canadian Board, in reporting the meaning of the results of the activities of the total enterprise to the International Joint Commission. This method of operation has made further cooperative studies difficult.

It is therefore recommended that any community that contemplates participating in a multi-agency air pollution study in the future might be well advised to develop, first, a clearly-written joint statement of how the enterprise will be managed. Any proposed changes in the method of management should then be formally recognized by written amendment to the joint statement. The management statement should include an agreement on how the meaning of the results is to be reported.

The importance of this can be illustrated by examining the Vegetation Effects study discussed by Messrs. Vaydik and Loncar at this conference. The formal report of the Vegetation Effects Study group was unanimously adopted by all committee members. There were no "majority" decisions. All differences of observation and opinion were carefully expressed in

the two annual reports. Yet Technical Advisory Board reports to the International Joint Commission contained vegetation effects information and opinions that had not been reviewed and/or approved by the Vegetation Effects Study Committee.

At one time or another, for longer or shorter periods, a large number of groups have participated in the study. Many were asked for advice in planning studies. Some chose to participate for a while with varying degrees of effort.

RESUME OF THE STUDY

Though there exist very few acceptable standards for non-detrimental air pollution concentrations, little effort was expended by the International Joint Commission Technical Advisory Board, at first, to correlate pollution concentrations with detrimental effects, except for planning the health effects study and laying the groundwork for it.

The Technical Advisory Board apparently came to the conclusion early in their investigation that observations of Ringelmann shades of smoke were adequate to determine the detrimental effects of smoke from ships. They began ship smoke observations almost at once, with the assistance of our Bureau in designing their forms, training their personnel, and helping

man the observation posts. These observations have continued.

Instrumental measurements of light transmission horizontally through the atmosphere were correlated with direct observation of horizontal visibility recorded by the U.S. Weather Bureau. Attempts were made to correlate light transmission measurements with the darkness of stain of filter paper used in air sampling. Illuminometer measurements have been made in Windsor and in a nearby non-industrial area. So far as I know, no acceptable correlations with any air pollutants have been found as yet. So far as I know, the Technical Advisory Board has not yet established criteria for detrimental effects of air pollution on visibility. It would seem to me that such criteria would need to incorporate some method to account for and evaluate natural visibility. In my opinion, reduced visibility is objectionable because it limits safe traffic movement, especially by air, it reduces sunlight, it limits people's view, and it causes people to become apprehensive as to their safety.

One type of soiling effect has been studied using the residue separated from air drawn through filter paper. The degree of staining has been recorded, using arbitrary numbers assigned to a visually

compared scale of shades of gray. Staining has also been recorded using the metered transmittance of light through the stained filter paper, and the metered reflectance of light from the stained filter paper. It is my understanding that both poly- and monochromatic light have been employed in the methods. So far as I know, the Technical Advisory Board has not yet established criteria for detrimental effects of air pollution on this type of soiling. In my opinion this type of soiling is caused primarily by suspended particles, including the soots and tars. It is, in my opinion, considered objectionable primarily because it darkens light surfaces and scatters light on dark surfaces.

Another type of soiling effect has been studied using the particles that settle into a dust fall container of the Detroit design. The catch is treated and measured in several ways. In Detroit, our Department weighs the water insoluble fraction before and after ashing. In Canada, the weight of the total catch of the water insoluble fraction and the weight of other fractions is determined by other solubilities and reactions. The larger weights are generally recorded as tons per square mile per month, based on the actual weights deposited in the specially

shaped container with a settlement area of about 100 square inches. So far as I know, the Technical Advisory Board has not yet established criteria for detrimental effects of air pollution on this type of soiling. It is, in my opinion,, considered objectionable primarily because it darkens light surfaces, scatters light on dark surfaces, and deposits foreign matter that is rough to the touch.

The effect of air pollution on vegetation has been studied, using existing plantings, which are numerous because the area has many trees (600,000 on public property in the City of Detroit alone) and many private gardens because of the large number of single homes. A survey team of municipal and county foresters, air pollution control administrative engineers, and college and federal vegetation specialists, plus an air pollution measurement specialist assigned to the Technical Advisory Board has examined vegetation in several parts of the area, especially near major industrial operations, in the Central Business District of Detroit, and in a "clean" control area. The team made several surveys, most of them in the early growing season, during the last two summers. There was no observed generalized damage to vegetation over the entire area. Some damage was observed in the close

"shadow" of presumptive sources of pollution. Some damage was also observed near heavily industrialized areas, but little plant tissue analytical work was performed to identify the type of air pollutant that may have caused the damage. No correlations have been reported as to the vegetation effects and the level of air pollution. So far as I know, the Technical Advisory Board has not yet established criteria for detrimental effects of air pollution on either annual or perennial vegetation. In my opinion any overt damage to vegetation, including generalized growth repression, is considered objectionable not only because of the economics and esthetics of the damage, but also because it tends to be accompanied by serious apprehension by people regarding the possibility of damage to their health. (It is of interest to note that the survey team's study changed the opinion of municipal foresters regarding the origin of some of their problems. For example, Detroit's central business district vegetation damage is now attributed to soil composition and other problems rather than to carbon monoxide or other automotive exhausts, as before.)

The effect of air pollution on materials by corrosion, erosion, and other physical and chemical damage has not, so far as I know, yet been studied. Some

planning for corrosion studies has been done, but it is, as yet, limited in scope. So far as I know, the Technical Advisory Board has not yet established criteria for detrimental effects of air pollution on materials of construction, fabrics, or protective and ornamental finishes such as automotive paint and plating. Such criteria, it would seem to me, would need some method to account for and evaluate natural damage to materials.

The study of the effects of air pollution on the health of residents of a large industrial community is unusual and interesting for many reasons. Detroit is considered now by some to be one of the cleaner heavily industrialized cities in the country and the world, with more air pollution control work being done continually. Obvious, widespread symptoms appear to be lacking. Therefore the study utilizes carefully matched groups of families, with similar socioeconomic status and broad racial groupings, but in areas of higher and lower pollution. Some of the groups are in Detroit, others are in Ontario.

Information is obtained regularly, by trained interviewers, as to the illnesses that occur.

"If the manifestations of the results of air pollution on health in this area were dramatic,

we wouldn't need to carry out a horizontal study of health effects, that is, a study of health over a period of time," said Mr. James T. Oliver, Principal Statistician, Detroit Department of Health.

Funds and manpower for the study come, on the American side, from the City of Detroit. For reasons that were not acceptable to the City, the United States Public Health Service had not, until very recently, supported the study with research funds, although it has had funds allocated for air pollution studies for some time. The City of Detroit works closely with the Canadian health agencies, treating the health study as a single study. Right now, the health study is in its second year. The health data are being entered on machine punched cards, which will also carry air pollution and meteorology data for those days that are unusual. Our Bureau plays its part in obtaining the air pollution data. The meteorological data is furnished mainly by the Canadian International Joint Commission Technical Advisory Board meteorologist.

It is interesting to note that only approximately $7\frac{1}{2}\%$ of the families have dropped out of the study for all reasons. It has been anticipated that a 10% dropout might occur during the first year, according to Mr. Oliver.

The state of the air has been indicated, in the areas where groups of families are being studied, by two types of data, although other types have been tried and still others are projected. One type is termed Sulfur Dioxide, as measured with the Thomas Autometer and similar conductivity methods. Since no significant amounts of interfering gases are known, it would seem that designating the meter reading as SO_2 , is valid for all practical purposes. The second type is variously termed total particulate matter, suspended particulate matter, air-borne particulate matter, or aerosols. Samples were collected on modified (reduced flow) high volume samplers developed, I believe, by Silverman, using an accordin pleated filter. The weight is recorded after drying for two hours at 110°C . An air volume value is calculated based on air-flow measurements at the beginning and end of the sampling period (usually 24 hours, but frequently 48 or even 72 hours). The data is recorded in micrograms per cubic meter of air. This sampler does not appear to catch many particles larger than 50 microns, due to trajectory of the larger, heavier particles, especially when the sampler has a rain hood. The drying of the sample might be expected to volatilize some of the original sample. Therefore it is my suggestion that

this data be designated by some special term, lest it become confused with the actual total particulate concentration in the atmosphere. Perhaps a term indicating the origin of the method as well as the specific sample preparation, might be devised.

Another phase of the study records meteorological data. In the health effects study it would appear that some of the morbidity or sickness that could not be understood in the light of known air pollution levels might, for example, be accounted for on the basis of a marked change in temperature, such as the passage of a cold front. Also, wind directions are apparently needed to help determine other major factors than ships, if detrimental air pollution is found to exist. Meanwhile, an extensive meteorological study correlating the weather with the degree of pollution is being carried on. The Technical Advisory Board plans to extend this to permit the development of simple criteria to permit warning if air pollution levels become dangerously high. Although this does not appear to be a required action for the investigation, the work has to date been interesting and useful to our Bureau.

The investigation has covered the original question of smoke and fly ash from ships only in part.

The Technical Advisory Board's recommendation to the International Joint Commission for ship smoke emission standards equivalent to those of Detroit, Windsor, and the ASME was rejected several years ago by the International Joint Commission. Since then new boiler firing equipment has been proved effective in service. So far as I know, the Technical Advisory Board has made no recommendations regarding the emission of fly ash from ships. As one would expect, some of the ship owners corrected the smoke emissions from some of their ships voluntarily. New ships and new reboilerings appear to be without smoke problems while traversing the Detroit River, though some types of stokers emit smoke when at dockside with low steam load. The rest of the ships (more than 25%) smoke more than Detroit or Windsor would allow if we could obtain a practical legal control.

By April, 1955, the International Joint Commission had received a recommendation from the Joint Advisory Technical Board and annual repeated representations from the Cities of Detroit and Windsor that the legal phases of ship smoke and fly ash control be fully explored. The International Joint Commission thereupon directed its legal advisors to carry out such a study and submit a report in six months or sooner,

if possible, on the legal problems and possible legal methods for establishing a legal control procedure over ship smoke. Some of the members of the International Joint Commission expressed especial concern over the need for control over air pollution from ships that will be coming into the Detroit River (and other areas containing population concentrations) after the St. Lawrence Seaway begins full-scale operations. It appears that Port Huron, Michigan, Sarnia, Ontario, and other communities along the St. Clair River, together with communities along the St. Mary's River and St. Lawrence River, as well as several port cities have been objecting to air pollution from ships. They appear to have been relying on the Detroit-Windsor Reference to obtain basic ship changes that would permit their operation within reasonable air pollution emission limits.

It should be pointed out that the smoke and fly ash from ships plying the Detroit River create obviously undesirable effects on visibility, soiling, and gross deposition on surfaces only for a distance of about one mile back from the River in the cleaner sections of the communities. These obvious emissions from ships also offend the general sensibilities of the citizens of our communities who have direct

knowledge of the effort and money spent in the communities for abating their air pollution.

With respect to the land-based air pollutants and the effects of all of the pollutants on the communities, the active participants in the Detroit-Windsor Air Pollution studies, including the members of the Technical Advisory Boards, are displaying less alarm about the possibility of a community-wide air pollution disaster now than earlier in the study. Whether this is, in part, due to the findings of the Vegetation Study and the preliminary information from the Health Study is not known.

CONCLUSION

There is no question in my mind that there are detrimental effects of land-based air pollution in the area. It is the reason for the operation of our Detroit air pollution control program, and the programs of many of our neighboring communities. Whether there is need for a trans-boundary control procedure for land-based sources of air pollution, or whether existing agencies of government will perform adequately without international direction remains an interesting subject of speculation, observation and discussion.

There is no question in my mind that there

are detrimental effects of air pollution from ships, in the form of smoke and fly ash, especially near the Detroit River. There is no question that there is need for a trans-boundary control procedure for smoke and fly ash from ships.

There is no question in my mind that the management procedure of the total study and many of its components should be formalized in writing so that volunteer participants, including individuals and groups, can learn of their roles with a minimum of delay and misunderstanding.

There is no question in my mind that criteria and perhaps quality levels, are sorely needed for air pollution, air pollutants, and their effects on property, people, and activities. It is hoped that the extensive, expensive operations of the Detroit River Area Air Pollution Study will develop such criteria as soon as possible.

There is no question in my mind that the interest of people and organizations in air pollutants, their effects, and their control is so great that only "defensive" considerations or fears of lack of objectiveness in obtaining and reporting data deter widespread support of and participation in any community's plans for studying its air pollution problems.



ONTARIO

P R O C E E D I N G S

OF THE

SELECT COMMITTEE, APPOINTED BY THE ONTARIO
LEGISLATURE, TO ENQUIRE INTO CERTAIN MATTERS
AND LEGISLATION REGARDING SMOKE CONTROL AND
AIR POLLUTION, IN ONTARIO.

Mr. A. H. Cowling, Chairman,
Presiding.

Dr. Frederick Evis, Secretary.

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VOLUME XVI

Wednesday, November 23rd, 1955.

Detroit, Michigan.

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S I X T E E N T H D A Y

Detroit, Michigan,
Wednesday, November 23rd, 1955,
9:30 o'clock, a.m.

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The further proceedings of this Committee
reconvened pursuant to adjournment.

PRESENT:

Mr. A. H. Cowling, Chairman,
Presiding.

Messrs. Brandon, Q.C.,
Elliott,
Morningstar,
Gordon,
Murdoch,
Thomas (Oshawa),

Hon. Mr. Kelly.

Dr. Frederick Evis, Secretary.

APPEARANCES:

Mr. B. Linsky, Smoke Abatement Officer, Detroit.
Mr. Harry Belyea, Industrial Hygiene Branch,
Department of Health, Toronto.
Mr. Abbott, President, Aristo Corp., Detroit
Mr. Wayne Buell, Aristo Corp., Detroit.
Mr. D. E. Ahrens, General Manager, Cadillac Plant.

Mr. Wm. Yaw,)	Public Relations
)	Office, Cadillac
Mr. Edward Faulkner)	Plant.

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---The further proceedings were had during a tour of the city of Detroit, made by the Committee, accompanied by Mr. Linsky.

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MR. LINSKY: To illustrate the difficulties involved in control of air pollution, may I say that in May, 1952, the odours from an industry in Sarnia, Ontario, sixty miles away on the edge of the river, was giving off odours which the plant itself was not able to identify, and was also puzzling to the city of Sarnia.

Those odours drifted from Sarnia, across the river, and over into the city of Detroit.

MR. BRANDON, Q.C.: Mr. Linsky, what can you tell us about temperature inversion? I understand -- in fact, I know, that they have a considerable problem with inversion in Los Angeles County.

MR. LINSKY: The longest inversion Detroit has ever had was one which lasted four days, at about the same time that Donora had its disaster in October, 1948.

The only reason a severe disaster was prevented in Detroit at that time was that there were some winds

experienced here which Donora did not have, because it is situated in a valley.

However, it did have some effects on the health of the people, particularly those with cardiac disorders and respiratory troubles.

Ever since the Donora disaster, daily measurements of air pollutants have been taken, as well as other meteorological factors.

Yesterday we were riding on a bus which used the recommended grade of fuel oil, and its fumes were neither visible nor offensive.

Today we have a bus which uses an improper grade of fuel oil, which saves the company a little money, but which emits fumes which are visible, smelly, and in other ways offensive.

In the smoke from the exhaust of this bus, aldehydes are the principal irritants, and also miscellaneous hydrocarbons are emitted.

The company which supplied the bus yesterday is owned by the Detroit City Transport Company, and they have given us complete co-operation, even to the extent that if a citizen reports any visible exhaust from one of their buses, they will pull the bus off its run immediately it returns to the barns, and it receives a complete overhaul, and is not put in service again until

it can be operated without emitting any air pollutants.

The company whose bus we are riding in today does not co-operate in this way. It belongs to the Greyhound Bus Lines.

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I am going to take the Committee on a drive around Belle Isle, so the members can obtain a general view of both the Detroit and Windsor industries.

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Sulphur dioxide from coal burning is always present, both in this country and in Canada, and is present almost everywhere except in two specific plants. They are the only two places in the world where installations have been made of sulphur dioxide reduction equipment in coal-burning furnaces, and until the standards are set, and we have the facts as to its result on the health of the people when in any great concentration in the air, the cost of installing control equipment will probably remain so high that, for the present at least, nothing is being actually required.

Nevertheless, I know that certain kinds of research work is being carried on by the coal industry to try and find a better and a cheaper way of taking the sulphur gases out of coal-burning plants.

MR. MURDOCH: Have you had any trouble in Detroit, with regard to nylon? I understand the Detroit Edison was concerned at one time with holes appearing frequently in nylon stockings.

MR. LINSKY: We have records back to 1947 of nylon stockings being damaged.

But by far a cause which was worse than the power plants, was an acid plant, which has since been put under very good control.

That was just after the R. L. Hearn station was established, and even a very light breeze from the lake, just enough to moisten it, would carry it slowly through the atmosphere.

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Over to the right is the Canadian Ford Company's foundry sand pile, but, as far as they are concerned, they are their own neighbors.

MR. ELLIOTT: Would the coal dust blow around through the atmosphere?

MR. LINSKY: It might. You should ask Mr. Boyle about that. It is a local problem in his jurisdiction.

That problem has been solved on the Detroit side of the river, and I imagine also on the Windsor side, by certain packing procedures, and proper loading down

by liquid latex coatings, to protect the pile from blowing away, as it otherwise might.

If that should happen, they could lose many tons of coal, which would cost them a considerable amount of money.

A great many new techniques have been developed to reduce the loss of coal, due to the wind blowing it away.

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That (indicating) is a sand hogger. It is not a good time of year to consider that too closely, as the shipping traffic is away down.

There are only the larger ore boats on the river now. The one you see there is apparently well loaded down.

The shipping traffic is away below its usual summer level, as they are beginning to run into the high-insurance period.

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There (indicating) is a boat with a diesel engine, burning steam turbines. That presents no problem at all. There is no smoke whatever coming from it.

The National Steel Corporation has close to one thousand boats -- commercial carriers -- anywhere

from eight hundred to one thousand ships coming down with loads of ore.

You can see his plimsoll line under the letter "E".

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We are now looking toward Detroit, and can see Edison's stacks.

It is reported that at one of the stockholders' meetings of the Detroit Edison Company, one of them asked about smoke, and the President said, "When there is smoke, it is a sign of insufficient combustion, and the Bureau is 'onto it' all the time".

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In the boilers, which are served by the seven stacks, they need low-sulphur coal. Otherwise, it will coke up, and clinker. As it is, it is less than one percent.

The other two stacks from boilers which are burning more coal a per hour than the rest of the plant put together, use pulverized coal-burning boilers. They can burn coals which have three percent. or four percent. sulphur -- I say they can, they do.

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Sulphur dioxide levels have not as yet been high enough in this area to cause damage to even the most tender vegetation.

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High temperature combustion from such plants puts more sulphur dioxide in the air than low-temperature boilers.

MR. MORNINGSTAR: Is there more sulphur in the ash?

MR. LINSKY: I have never explored that at all.

What you see coming out of those stacks is fly ash -- very, very fine fly ash -- which you can see in the collectors.

The amount coming out is within our local standards.

You get a little puff of smoke only, but it gets very black in a hurry, and pressure is being put on the Edison Company at the present time to make some effort to keep them clean.

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Directly across from us, you can see two stacks, some distance apart, from two houses. That is the primary water-pumping plant of the city of Detroit, which uses coal-fired boilers.

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At one time, we had a sewage pumping station which created a difficult smoke problem.

However, the city of Detroit took out the old plant and put in new pumps to clean up the smoke

problem in the neighborhood.

They found they could operate then with less manpower.

They would not have done it at all, except that the smoke people were after them to clean up that problem. They could have done it for \$2,000 or \$3,000, but they chose to do it the other way.

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We have a very close relationship with the Mayor, and we discuss things which are of direct interest to him.

The Mayor has a personal and direct interest in air pollution, and we have a great many things to talk about.

He considers that air pollution is one of the important problems in the city, and is one of the things he has taken on himself in recent years, inasmuch as plans are being made for the rehabilitation of the city, he wants at least to clean up the city's heart, including the old buildings, and so forth, and replace them with modern stores, apartments, and so forth, and cleaning up the air is one of the necessary parts of this programme.

THE CHAIRMAN: How frequently do they have to clean the buildings, as compared with what was required before?

MR. LINSKY: The economic costs of the soiling effects of air pollution have not been nailed down. We do not know what buildings have been cleaned in the last five years, but many of them have been permitted to get dirtier and dirtier.

Fifteen years ago, no one ever thought of cleaning a building. Now there is a feeling that they are not going to become dirty very fast, anyway.

There is no dollar-cost data to enable us to nail down exactly how often they have to clean the buildings now as compared to former times.

We have spent more energy getting things cleaned up, than in measuring the costs. It takes a lot of money to cover the costs, that you may be sure.

We went to the downtown Merchants' Association, and asked if they could figures on the cost of soiled merchandise. Many of the heads of department stores said they had not kept any record of the cost of the soiling of merchandise.

However, it is a very real cost, and if you care to, you can wear a shirt the whole day, instead of only half a day as formerly, and then go out to dinner at night.

Six years ago, you could not do that.

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These (indicating) are apartment houses here, and they are pretty close to the shipping channel, which is just on the other side of Belle Isle.

The entire area from here to the east is residential, except one small stretch, which is composed of industrial properties.

That is one reason why we have been "screaming" to get the boats cleaned up, and why the Mayor has been so anxious, as he said yesterday, when he was talking to you.

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Just beyond those apartment houses (indicating) are two stacks of the waterworks pumping station. They produce a great deal of steam and burn a great deal of coal, and pump a great deal of water, and yet they do not cause a problem as far as the apartment houses which are very close, are concerned.

Formerly, they did constitute quite a problem.

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There (indicating) is the Chrysler plant, where they make Chrysler cars and Chrysler bodies.

At one time, we had some air-pollution problems there from their cast-iron grinding.

They now have wet collectors which do a fair job, but once in awhile, something goes wrong, and they

find they have rust spreading around.

They have collectors which do a good enough job so they can take the air and put it right back into the plant, and heat it, or leave it outside, in the summer time.

They are using bag collectors in some plants, and oil collectors in others.

MR. ELLIOTT: How much did that cost?

MR. LINSKY: This installation costs about \$10,000 or \$15,000 per unit. I am not sure whether they have four or eight of them.

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Now, we are turning north, leaving the river, and heading away from Canada, to go through one of the industrial belts.

These are spread out like a fan along the railroads' rights-of-way, and houses are being built around them.

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Directly ahead, is the power plant of the Hudson Motor Company.

As a direct result of smoke and fly ash, they completely re-built the plant, at a cost of \$2 million.

Within the last year or so, Hudson has merged with Nash, and has removed most of its operations out of

this area.

It has a very clean power plant.

Here is one of the things which happened, however. We began to have some smoke trouble from them after most of the factory had moved out, because the boilers were running at such a low rate, that they were under smoke-violation orders, in the light-load period and evenings, and weekends during the summer months.

In the winter time, they have enough load just heating the plant.

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The plant to our left is that of the Flood Manufacturing Company. The tall stacks are from their power house and shop.

They installed ash collectors, costing them approximately \$100,000, and they constitute no problem at all.

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Up to our left are the foundry cupolas, some of which had collectors on them, which we saw yesterday afternoon.

One of the problems they are working on now is in connection with oil in the scrap metal in the fine borings and turnings in the briquette manufacturing.

As the metal heats up, the oil sort of cooks

off, and is not burned off, and it goes out of the stack, right through the water, and you can see the plume right now over there (indicating), even when the blast is not on.

They are under a violation notice at the present time.

The problem is in getting the oil taken care of, so that it does not cook off, go up the stack, and spread over the neighbourhood.

MR. BRANDON, Q.C.: When you serve anybody with a violation notice, do you give them a set time to rectify the violation, depending upon the time it will take?

MR. LINSKY: When we write a violation notice, we establish the time of compliance, or we direct them to reply within anywhere from ten to thirty days, and advising the steps they are to take.

We want them to know what they have to do. First, you have to get an engineering study so the management can decide.

There are half a dozen ways to solve a problem, and management can decide which one it wants to adopt, but we want them to tell us what they are going to do, so that anyone in our office can tell anybody who enquires, what is being done.

From the time management says, "We will do it", it takes a minimum of twelve months to get the job done.

We have, however, had some projects which took over four years from the time management said, "Yes", until the work was completed.

If it is causing a high hazard or severe property damage, we may have to interrupt production, but if it is just a nuisance, we feel we are justified in giving them time to do the job, without any interruptions in production.

We have had a few cases where we told a company, "Either you shut down or we will go into court".

They are usually what I have referred to as "spitting-distance problems". That is, it is within a block, or, at the most, a quarter of a mile, where people and property are being affected.

In that way, we have not had many court battles, and we have certainly forced a great deal of action, many times without a fight in the courts.

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Here (indicating) you will see some parts' plants.

There (indicating) is the Automotive Body Division of Chrysler.

There (indicating) is the Packard Plant, where

there is very little assembling being done.

The only possible air-pollution problem you might have would be spraying operations, cleaning, and power-plant operations. We have no problems from these plants at this time.

Some cities give awards or certificates, but we have never felt it proper to "pat somebody on the back" for doing something they should have done in the first place.

We have, however, helped them with local publicity in the work they have been doing.

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This plant on the left (indicating) with the two brick stacks is the city incinerator. It has not yet been re-built. Fly ash washers have not yet been installed. The money is in the till for it, and it probably will be done during the next year and a half.

We do not get many complaints from that one. It is a fair distance from its neighbors.

However, we got one last summer from a nearby building, and we sent a radio car right out and found they were burning some plastic material, and putting out heavy, yellow, choking fumes. It was one of the chlorine-base plastics.

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We are now going over to see the Dodge-Winfield plant, one of our "problem children".

They have spent \$140,000 for two different types of collectors, which have not been proved out yet.

They still have a problem.

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Straight over to your right, you will see two stacks, one of which is emitting plumes.

That is a hot-mix asphalt plant, city-owned.

They draw sand and gravel, and so forth, and mix it with the asphalt, and use it for road construction and repairs.

It is right on the edge of the city airport which is used for small planes. It is too small for transport planes.

It creates quite a fog over the airport, and on the cars in the neighborhood.

The city put in one design of wet collector, but it has not met with the specifications, and the contract had to be closed out on that basis, and so the unit will have to be re-worked completely, in the hope that the next one will be operating properly.

It is operating now on light work.

The city has not officially taken possession, and will not until the matter has been cleared up.

However, it is not expected the unit will be returned to the contractor.

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The plants along here (indicating) are mostly rather nice.

That (indicating) is the R. P. Sherer Company's plant which produces nine-tenths of the gelatin capsules which are used by the drug industry.

There (indicating) are some machine shops, with high-value operations, using a fair amount of power per acre.

There (indicating) is a tool and die works.

The R. P. Sherer Company has to be very, very clean, because they actually package the drugs in the capsules.

THE CHAIRMAN: Did you not have a case of a company actually contaminating its own product?

MR. LINSKY: That was the Parke-Davis plant back on the river.

They were getting some dust and mould and spores in the research department, which was working on antibiotics, and they did not want to have the yeast and mould coming in.

We found that the major source of the problem was in their own incubator, which they discontinued using

until they could have it re-built.

We worked with the chemists and the bio-chemists in endeavouring to solve the problem.

From our own background, we were able to help them find the answer. We had a "hunch" when we went in there, but, as you know, you do not spend much money on "hunches".

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There is the Dodge-Winfield plant (indicating) with a 60-foot stack on top of the building. It is emitting very fine dust, iron oxide, and some carbon from the carbon electrodes, and the electrode furnace.

They are melting iron directly, without using cupolas. They originally tried a white-washer installation which did not work out. Then they went to a cloth filter collector, at a cost of roughly \$90,000, but it plugged up so fast that they were unable to draw air through it.

We agreed to a temporary by-pass on the 60-foot stacks, so that they could temporarily by-pass the stack while working on it.

There are some small houses about 200 feet away, and before the stack extension was put up, they were being repeatedly and almost continuously flooded.

Now the emission is going up in the air, and

spreading some, but the company is still under violation orders.

Their problem has not been solved anywhere in the world as yet.

They have even used an electron microscope in determining particle size. We were sure it would work, but it did not. It just plugged up too fast. The particles clung to the fibres of the cloth, and they simply cannot be removed.

The answer apparently cannot be given by the University laboratories. It has to be tried out with sample operations.

It is a local-neighborhood problem which affects several blocks. The neighbors have been very patient, and have relied on us to have the problem solved.

It is a well-mannered industry, creating a problem because the technical problem has not been solved as yet.

This is one of the very few cases of its kind we have encountered so far.

They are going to have to try several things ahead of the bag collector. The emission does not land, but flows across and dirties the houses, and the laundry work hanging outside.

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The city of Detroit is in the process of replacing municipal garbage incinerators by municipal garbage grinders which will chew up the garbage, and feed it into the sewage disposal system.

It is considered better and cheaper to increase the capacity of the sewage system than to continue to operate the municipal incinerators.

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The Mayor desires to encourage householders to instal food waste disposal units.

A committee for a garbage-free city -- which the Mayor has officially endorsed -- put on a campaign to encourage the disposal of garbage in homes on a residential level.

We have not as yet been able to tell the Mayor there is a good commercial incinerator.

The manufacturers have got the price down by an average of \$200 to \$250.

For normal installations, one of the largest department stores is taking orders at \$200., where they do not have to do any fancy repairs to a sink, for the outlet of the waste-food grinder.

As of last night, Council passed an ordinance providing that all new homes or commercial installations are to have food-disposal equipment, effective January 1st.

MR. ELLIOTT: You are going to still have cans?

MR. LINSKY: We will have to have an incinerator for paper, cans and bottles.

In any event, it will get rid of the major garbage standing along the sidewalks, and having to be taken down the street in trucks.

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---The Committee halted its tour to visit the Aristo Corporation. It was met by Mr. Abbott, the President, who described the processes as they are carrying them out.

---A visit was made to the gas-fired incinerator, and the Committee was told the nature of the odours which were formerly emitted.

MR. BUELL: Gentlemen, I will try to tell you a little about the materials handled, from beginning to end.

The material which is being processed at the present time is a by-product of the Craft Paper industry.

Actually, in this process, we have taken a great many precautions to keep the kettles closed all the time. At one time it was customary to open the main hole and take from one-half hour to one hour to put in the added ingredients.

Now, we have quick-opening valves and hoppers, so materials can be added without fumes entering the atmosphere.

When cars were being loaded and unloaded, there was some spillage on the railroad tracks, and therefore, the track was surfaced with concrete, at a cost of approximately \$3,500.

The incinerator cost at least \$3,000 to instal.

One of the very serious problems was that of containing the fumes when a batch of material was dropped at a temperature of from 400 to 500 degrees into coolers in the basement, that is, from one tank into the cooler, where bleaching and so forth, is done.

The hot material is dropped into a cold kettle, and it is very difficult to close it tight enough, and carry away the expanded gases at that time, so we have receivers or tanks into which the material is dropped, and we have these piped to the incinerators.

When the pumps would leak, we had to get special seals.

I do not know whether I can think of anything else to tell you. Perhaps some of you gentlemen have some questions.

MR. ELLIOTT: Do you use any fats from animals?

MR. BUELL: No, we do not, but I believe the system we have might be applicable to that type of material.

Our principal difficulty has been to keep the

gases which do not condense tightly enclosed all the time, even when we are loading or emptying kettles, loading tank cars, storage tanks, in fact, all throughout the plant.

That has been the principal problem, but we have brought that under control, we think.

Water is a by-product of the reaction which goes off in the form of vapour, and carries off some fat.

The fat and water condense, but many of the odours do not.

That condensate -- water plus fat -- which is condensed in the condenser room, goes into reflex condensers, and drops into a four-gallon or five-gallon tank, which is buried in the ground, and is disposed of by hauling away.

I suspect it could be treated sufficiently to be put into a sewer, but at present we have not had to go that far.

THE CHAIRMAN: Do you ship in the finished stage?

MR. BUELL: Yes, we ship in the finished stage. The finished product does not have a bad odour.

In the cold stage, it would not be objectionable, used in the foundry, in sand casting.

It is mixed with sand and gravel by other plants, and there seems to be no objection.

When you load as many as five dust collectors, you take the displaced air and put it through the bag collectors.

Here (indicating) it is being put through a fume-burning incinerator. You have to burn it up, and with 1200 degrees or 1400 degrees, the gases burn completely, leaving no odour, in other words, there is no odour problem remaining.

We burn the city-piped natural gas.

We had a small incinerator which was adequate, but as the plant grew and production increased, the small incinerator got to a point where it was causing trouble.

MR. LINSKY: You can imagine what they were getting with a 5-mile south wind.

Within the past five years, a larger incinerator was bought and installed.

We have had good co-operation from the Company. The trouble was ironed out across the table, and not in the courts. They spent money in the plant, and not in the courts.

We spent engineering time in the plant, and not in the courts.

This is a well-mannered industry, with a potentia

high-nuisance value, but they have learned to deal with it, and they get along well with their neighbors.

I would like to express our thanks, on behalf of our group, for your courtesy in showing us through the plant.

I understand this is the first time it has ever been shown publicly. Four months ago, you were not at this stage.

MR. BUELL: We have done a great deal in the past few years.

I was telling Mr. Linsky I was pleased to hear he was bringing somebody out.

If you would like any further information, we would be only too happy to provide you with anything we have.

THE CHAIRMAN: Thank you very much. We appreciate your offer, and we may have occasion to accept it.

---Whereupon the Committee left the plant, and the tour was continued.

MR. LINSKY: There are two communities, Hamtramck and Highland Park, which are completely surrounded by the city of Detroit, but which are municipalities in themselves, with their own Mayors, services, Councils, and so forth.

We are going through Highland Park now.

The other one, Hamtranck, has some good air pollution problems, and I believe there are a couple in Highland Park.

THE CHAIRMAN: Do they work well with you?

MR. LINSKY: They do, to some degree. We mentioned them yesterday in passing.

There are some jobs we wish they would get done faster.

We work as closely with Hamtranck as we do with Windsor, considering the size of the communities.

In Hamtranck, they have a number of foundries, power plants, and so forth.

In Highland Park, they have machine shops and power plants related to automobile plants. They are not too much of a problem.

There are some in Hamtranck which we are looking forward to seeing cleaned up.

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Over to the left (indicating), is the Chrysler Highland Park plant, which also includes the engineering research laboratories.

There is no air-pollution problem there.

You have now seen a fair amount of the area, and you can see why we can so easily use the seventeen air-pollution inspectors we have, in fact, we could use

more if we had them.

We have a great many heating and industrial operations.

DOCTOR EVIS (Secretary): What are the qualifications required for the inspectors?

MR. LINSKY: We desire college graduates in engineering. We have two or three who meet that qualification.

The others have a minimum of high school education, plus additional industrial training.

Nine-tenths of the actual work is in combustion, burning coal, and so forth, and the other tenth is in connection with chemical and metallurgical processing industries.

One of our men is a graduate metallurgical engineer. He is a retired foundry superintendent, with a fairly decent income.

I believe his doctor told him he had better go to work.

Another man is a graduate chemist, and has been an air-pollution inspector for almost three years. He has specific experience in instructions for the installation of gas and oil-fired furnaces, and after he had been with us for three years, took an examination and was promoted to Senior Assistant Engineer, and is on our

staff.

Several of the other men have power-plant operation experience, and experience with different kinds of equipment, both small and large.

Some of the older men are finishing up their engineering course at night school, to be better qualified to do the job, and also to make themselves eligible for promotion.

The pay schedule is roughly, a minimum of \$5,800, which increases to \$6,300 over a three-year or three and one-half year period.

We have one opening we have been trying to fill, and another opening was filled last week.

One has been open for about three months, and we do not now have a qualified man to fill the position.

We have not had a high turn-over of men in the past, because the work has been so awfully interesting, and requires someone who has a good, health curiosity, and wants to get into things -- who wants to "get around".

He has to have the ability to meet many different kinds of people, from the justifiably irate housewife, to an adamant general manager, who says, "We have been doing it this way for forty years, and now you ask us to change".

We give specific training in meetings in regard

to dealing with people. This has been very helpful to us.

We put all our inspectors through twenty hours of instruction in human relations, that is, the ability to get along with people, recognizing trouble signs and what to do.

This keeps things running a great deal more smoothly.

If you have the kind of inspector who visualizes himself as a man with a badge and a club, he can get you into more trouble in three days, than I could in a month, and still we would not get the job done.

DOCTOR EVIS (Secretary): Do you instruct them yourself?

MR. LINSKY: About four years ago, we had the training division of our Civil Service staff arrange a course, and they arranged for instructors from Wayne University Business School.

It is, to a large extent, a sales job, and the more sales, the less slugging, and the better people feel about each other.

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That (indicating) is the New York Central roundhouse. I am looking to see if there are any indications of a coal fire, but I do not see any stack

emitting smoke.

They do not have many coal-fired engines working out of this yard any more.

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---The tour by the Committee was interrupted to inspect the foundry of the Cadillac plant, and were met by Mr. Dixon, the foundry metallurgist, Mr. William Yaw, and Mr. Edward Faulkner, of the Public Relations Service.

---The General Manager is Mr. Don E. Ahrens.

MR. AHRENS: Prior to the installation of the collectors on the cupolas, the Cadillac Company had to remove between six and eight inches of soot and ash from their roof every month.

Now that the Company has installed an after-burner washer, and a vortex cyclone-type precipitator, there is no need to clean the factory roof at all.

MR. LINSKY: It is suggested if there are any questions, we try to get them answered by the specialists in the Company, who are present now.

DOCTOR EVIS (Secretary): Could we have the approximate cost of the collector installation?

MR. AHRENS: Roughly, one half a million dollars.

One of the installations which I think will interest you, is that used in testing how tall those collector stacks should be, and how fast the gases should come out of the end, so that you will practically

never get a down wash to the street level.

The Company engaged the University of Michigan to promote studies into this question.

They made up a scale model costing \$900,000 and came up with a system devised to get the maximum thrust and the minimum down wash into the street area.

DOCTOR EVIS (Secretary): How much did you spend on cleaning?

MR. AHRENS: Every three months, we spend about \$6,000 in manpower costs from a year ago next month.

Now, we save about \$24,000 a year by not having to do the cleaning.

DOCTOR EVIS (Secretary): Has there been any change in working conditions?

MR. AHRENS: They have taken the out-going end, and cleaned that off.

It is my understanding that the incinerator cost about one million dollars, and that it has a capacity of 5,000 pounds per hour of combustible refuse; 20 tons per shift, or 60 tons per day, which would represent what you would be putting through in the average small municipality.

That incinerator is equipped with special burners to burn dirty oil from coal-burning installations.

It has a section where they can slip in a

five-gallon paint sludge can. It has three burners to light the stuff, and after-burners to keep the temperature hot enough in the second section, so that you are always burning up your smoke and odours.

The combustion chamber is a wet spray chamber, and spray nozzles are used which cool the gases, so that the fan can handle a large amount, and also collect fly ash.

MR. LINSKY: How much cinder and fly ash are you collecting in the cupola collectors?

MR. AHRENS: We melted 11,129 tons of iron in October, and collected 131 tons of ash.

MR. LINSKY: What did you do with it?

MR. AHRENS: We took it out and dumped it into the pit -- a hole,-- thirty miles out of the city.

MR. LINSKY: How much did it cost? Is it an expensive proposition?

MR. AHRENS: Formerly the wind carried that stuff off. , Sometimes the neighbors' cars had rust spots on them.

MR. LINSKY: Sometimes your own cars got rust spots on them, too?

MR. AHRENS: Quite frequently.

MR. LINSKY: What percent. of foundry plant investment would you say your cleaning costs -- that is,

on capital equipment?

MR. AHRENS: I do not know.

MR. LINSKY: I have no other questions.

THE CHAIRMAN: I think that covers it all.

---Whereupon luncheon was served in the Cadillac plant, to the members of the Committee and visitors.

THE CHAIRMAN: I will ask Mr. Thomas to thank the Company and its representatives, on behalf of the Committee.

MR. THOMAS (Oshawa): Mr. Chairman, Mr. Ahrens, Mr. Linsky, and gentlemen: may I assure you, on behalf of the Committee, that we appreciate very much the interest you have taken, and the information you have given to us this afternoon. It has been most interesting and very informative, and we do appreciate it.

On behalf of the Committee, I wish to thank you all for the assistance you have given us on our tour this afternoon.

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---Whereupon the further proceedings of this Committee adjourned to reconvene in the city of Windsor, Ontario, on Thursday, November 24th, 1955, at 9:30 o'clock, a.m.

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P R O C E E D I N G S

OF THE

SELECT COMMITTEE, APPOINTED BY THE ONTARIO
LEGISLATURE, TO ENQUIRE INTO CERTAIN MATTERS
AND LEGISLATION REGARDING SMOKE CONTROL AND
AIR POLLUTION, IN ONTARIO.

Mr. A. H. Cowling, Chairman,
Presiding.

Dr. Frederick Evis, Secretary.

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Thursday, November 24th, 1955.

Windsor, Ontario.

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S E V E N T E E N T H D A Y

Windsor, Ontario,
November 24th, 1955,
9:00 o'clock, a.m.

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The further proceedings of this Committee
reconvened pursuant to adjournment.

PRESENT:

Mr. A. H. Cowling, Chairman,
 Presiding.

Messrs. Murdoch,
 Elliott,
 Morningstar,
 Gordon,

Dr. Frederick Evis, Secretary.

APPEARANCES:

Mr. S. C. Boyle, Chief Smoke Inspector,
 City of Windsor.

Mr. Thomas Eaton, The Windsor Smoke Control
 Board.

Mr. William Garrett, Windsor Smoke Abatement Board.

Mr. Arthur Hooper, Windsor Smoke Control Board.

Mr. J. A. Ronson, Windsor Smoke Control Board.

Mr. M. J. Patrick, Mayor, City of Windsor.

Mr. Allison, Terminal Trainmaster, C.N.R.

Mr. Cole,	Representing the International Joint Commission.
Mr. Capper,	Locomotive Foreman, Canadian National Railway Yards.
Mr. Harry Belyea,	Industrial Hygienist, Department of Health, Ontario.
Mr. B. Linsky,	Chief, Air Pollution Bureau, Detroit, Michigan.
Mr. I. H. Reid,	Superintendent of the Ford foundry.
Mr. Bonham,	Ford foundry.
Mr. Proudfoot,	Ford foundry.
Doctor McGavin,	Head of the Medical Department, Ford Motor Company.
Mr. Ford McKay,	Auto Specialties Company (Canada) Ltd.
Mr. Andy Kadosky,	Auto Specialities Company (Canada) Ltd.
Mr. Stalker,	Canadian Pacific Railway, Toronto
Mr. Whalen,	Assistant Superintendent, Canadian Pacific Railway, Windsor.

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---The following proceedings were had at a meeting of the Committee in the City Hall, Windsor, Ontario.

THE CHAIRMAN: Mr. Mayor, I would like to say that your Smoke Abatement Officers have been very courteous since we arrived in the Detroit-Windsor area.

MAYOR PATRICK: They go about things across the line in a different way from that with which we try to approach them.

Mr. Boyle has been doing a splendid job.

As you well know, this is a tremendous task. I do not think it is something that is going to be completely corrected over night. It is going to require

a great deal of hard work.

I take it this morning that what you have in mind is to visit some of the industries in the Windsor area?

MR. BOYLE: That is right, Mr. Mayor. We will be touring the city, and visiting a laboratory, and we hope to arrive at the Ford Plant shortly after ten o'clock.

We will visit a couple of foundries this afternoon.

We plan on holding a public hearing in the Council Chamber tomorrow morning.

MAYOR PATRICK: A public hearing?

MR. BOYLE: Yes, Mr. Mayor, commencing at nine-thirty or ten o'clock, and possibly lasting all day.

MAYOR PATRICK: I would like, on behalf of the citizens of Windsor, to extend an official welcome to you, Mr. Chairman, and to your Committee.

We certainly appreciate the work you are doing, and certainly the approach which is being made toward solving the problem, is a step in the right direction. If we do not attempt to solve this problem, it certainly will never be accomplished.

I am, indeed, gratified to see that something is being done.

---The Committee retired from the office of His Worship, Mayor Patrick and assembled in a bus, for a tour of the city and district.

MR. BOYLE: Mr. Chairman and gentlemen, we are going to stop on the river front here, opposite the Canadian National Railway roundhouse, where you will meet the Terminal Trainmaster, we expect.

You will be able to see the river-front section, upon which is located the Canadian National Railway, and then we will move a little further down to the laboratory, where the readings in this area are taken by the International Joint Commission's Technical Advisory Board.

We are planning on being at the corner of Fern and Riverside Drive for a group picture, for publication.

---The Committee stopped at the premises of the Canadian National Railway and were met by Mr. Allison, the Terminal Trainmaster.

THE CHAIRMAN: I notice, Mr. Allison, an engine over there (indicating) which is emitting considerable smoke.

MR. ALLISON: The reason the engine is making smoke is due just to laziness, to a great degree, because these locomotives are provided with equipment which, if properly used, could reduce smoke to a minimum.

We have data available at the office, from which we can show you some of the steps we have taken, and we can show you correspondence, after complaints have been received, where the individuals responsible for the smoke from a particular locomotive, have been

penalized, and given demerit marks.

MR. BOYLE: I may say we have had wonderful co-operation from the Canadian National Railway, and also from the Canadian Pacific Railway, in fact, all of the railroads in this district.

We have six railroads entering the city of Windsor.

MR. ALLISON: As you people are going down river, you will be enabled to get a fairly good picture of what is going on across the river.

That (indicating) is about what it usually is over there.

---The Committee resumed the tour, and later stopped at the laboratory of the International Joint Commission's Technical Advisory Board, where they were met by Mr. A. F. W. Cole.

THE CHAIRMAN: Is this the only laboratory the Technical Advisory Board of the International Joint Commission has?

MR. COLE: We have laboratory facilities in Ottawa, too, but this is the actual field office.

The governments of Canada and the United States were given authority to go ahead and endeavour to determine the amount of damage caused by air pollution crossing the International boundary in the Detroit-Windsor area.

They were given a very specific term of reference

in connection with the smoke from local shipping. This was something everybody could see, on both sides of the river, but nobody was inclined to accept the responsibility of doing anything about it.

The Canadian government set up a small laboratory here.

The United States government did not proceed in quite the same way. They had a larger laboratory set up elsewhere, and they borrowed part-time personnel.

This amounted to a full-time job for a year, and they had very good co-operation from some of the municipal and state agencies, in fact, they borrowed some of their people.

They have done over half the work, although it looks from the concentration of our laboratory as if the Canadian government had done a great deal.

As for the per capita share -- well, I will not say anything about that.

I know that Mr. Boyle and his associates, from time to time, get a little impatient with us, because we are not sufficiently involved in the control of air pollution, which, of course, is their main job.

Practically our whole job here is collecting information on the pollution, about which we can get some ideas.

Unfortunately, in the air-pollution field, we can see smoke, if it is black enough, but we cannot see a number of things which have just as much effect in causing damage to materials, as well as humans.

However, we have to make use of what means of measurement we have available, and what means have proven acceptable.

At the present time, we have been making observations on the lake shipping as it goes up and down the river, and that is one of the places where we have not been able to devise a satisfactory method of measurement.

We cannot jump on each boat as it goes past, and measure the amount of smoke and dirt and contaminating gases which are being emitted. The best we can do is to judge from what we observe.

THE CHAIRMAN: To whom do you report?

MR. COLE: Our findings are collected by the Advisory Committee, for the Technical Advisory Board.

All decisions by the International Joint Commission are reached either in Ottawa or Washington.

THE CHAIRMAN: But they are based on your studies?

MR. COLE: They are based on the studies in this laboratory, yes, and also on the studies made by

the American government.

MR. ELLIOTT: Is this the central point for your investigations?

MR. COLE: Yes.

Beside having an observer in this building, at times others are stationed in other spots, so they will not be making observations from the same point all the time. Here they are on the roof.

MR. ELLIOTT: Do you take photographs?

MR. COLE: Pictures are not acceptable, because that is only an instantaneous observation, and you have to take observations over a certain period of time.

THE CHAIRMAN: I imagine it will require a few years for you to complete conducting your studies.

MR. COLE: We estimate six years of continuous study.

MR. MURDOCH: Is it going to be a continuing study?

MR. COLE: I cannot say anything about that. I would imagine that as soon as sufficient information is collected to fulfill the original terms of reference, the study may, at least, slow down, or temporarily cease, in order to provide an opportunity for evaluating the data.

THE CHAIRMAN: At that time then you would assume

that the air pollution studies in the Detroit-Windsor area would be finished, that is, when your findings are finalized?

MR. COLE: It would only concern the work which had been done to that date.

I believe the final evaluation of what has been going on for the past five or six years has already commenced, so that phase of the work might be finished within a year or two.

THE CHAIRMAN: This report I understand the International Joint Commission is going to present in Washington, in April next, will be based, to a large degree, upon the information you have provided to them?

MR. COLE: I would imagine it will have to be.

MR. MURDOCH: Do the boats fire up in Amherstburg, so they can make an apparently clean run past this point?

MR. COLE: They have been caught doing that, and to curb that sort of action, our friends across the river set up a station at the lower end of Belle Isle, extending up to Gross Point, and at a number of intermediate points.

There was a slight increase in the average pollution, just enough to lead you to think they were being a bit careful when they reached the heavier centres

of population, but the increase was not too great, and hardly indicated they were doing it consistently.

It did look, however, as if some of them were aware of the fact, and that when they came close to the City Hall, they had better clean up.

MR. BOYLE: Thank you very much, Mr. Cole. If you have the time and opportunity, we would be very glad to have you attend our meeting at the City Hall tomorrow morning.

I imagine some of the gentlemen on the Committee may like to ask you some questions.

MR. COLE: Fine, thank you.

There is one thing perhaps I should mention before you leave.

I mentioned the lake shipping, because that was a specific point in our terms of reference, that is, the smoke emitting from lake shipping.

Actually, we have a number of field stations in the Windsor area, determining the density of sulphur dioxide gas, not because we know too much about it, but because it is the easiest thing for us to collect, and there is some indication that sulphur dioxide is tied in with minor health irritations, and so on.

DOCTOR EVIS (Secretary): We have heard something of that nature, across the river.

THE CHAIRMAN: I would like to thank you very much, Mr. Cole, for myself and on behalf of the Committee, for the interesting and informative information you have given us. We shall hope to see you at our meeting tomorrow morning.

---The Committee then left the laboratory, and proceeded to the yards of the Canadian National Railway, where they were met by Mr. Capper.

MR. BOYLE: Would it be possible, Mr. Capper, to give the gentlemen of the Committee, and the lady present, a brief outline of just how you proceed to operate these lighting-off oil burners in the locomotives, to reduce the smoke?

MR. CAPPER: As you may know, all of our engines are equipped with smoke consumers, and it is a matter of training and supervision, to ensure that the men will use the equipment that is on the engines properly, in order to attain successful operation, and cut down on our smoke pollution.

MR. GORDON: Have they these smoke consumers at Hamilton and Brantford, for instance?

MR. CAPPER: Yes.

It is not just a "set-up" at this particular point.

We feel that at least 80 percent. of our success in the use of these consumers is due directly to

education, that is, to getting the ordinary chaps to think, not just of one engine, but of what may be done in order to prevent smoke pollution as much as possible.

As far as our roundhouse is concerned, we have oil nozzles for lighting up.

We also have the oil nozzles in our stationary boilers, and these can be controlled much more successfully.

The sort of coal we have been receiving during the last couple of years, is so far ahead of what we received previously, that we have been able to successfully control our smoke emissions, as far as our engines and roundhouses are concerned.

Perhaps our biggest trouble is when we light up a coal-burning engine, after a wash-out, when one comes off of a passenger train, and we have not another engine available at the time.

When an engine comes in with 220 pounds pressure, and has to go out again with 44 pounds pressure, and we have had to put a man in to make hurried repairs, and then start a new fire, we are bound to have smoke, because we have to force the engine more than ordinarily would be the case.

In the ordinary course of lighting-up engines, we have very little trouble. It can be controlled, when

you have the time, after a wash-out.

We use the oil-burning equipment, and in that way, we can control the smoke. We do not put coal into the firebox, until the engine has a pressure of from 200 to 250 pounds of steam, and even then we add the coal gradually.

DOCTOR EVIS (Secretary): What is the situation in regard to diesels? Are you getting any of them in, and, if so, how rapidly?

MR. CAPPER: They are presumed to be coming at any time.

DOCTOR EVIS (Secretary): Are there any here now?

MR. CAPPER: I have two switchers in the yard. We use them all the time on freight service.

As far as our own yard here is concerned, the last information I have is there is a possibility that this yard will eventually be dieselized, as far as the Canadian National Railway is concerned.

Of course, you have to bear in mind that the Canadian National programme has dropped back a little, on account of the General Motors strike. We are about twenty units behind right now.

I do not know what headquarters has in mind as far as that is concerned, but I do not think I am

violating any secret when I say that we are in the process of dieselization.

DOCTOR EVIS (Secretary): I understand that some experts predict it will take twenty years.

MR. CAPPER: Not according to the programme as I understand it.

It will be from five to seven years, as far as the Canadian National is concerned. Of course, that is the over-all picture. These things keep moving along.

MR. BELYEA: You expect that, as far as the main terminal points are concerned?

MR. CAPPER: Definitely. They are already using diesels on passenger trains.

In the early part of October, they attached them to several trains in order to test them out, and once they got the picture, it did not take long for them to get into operation.

The rate will probably be speeded up.

I understand a considerable number of engines are being prepared.

MR. ELLIOTT: Do all the Canadian diesels come from Canadian plants?

MR. CAPPER: Mostly from General Motors at London, and the Canadian Locomotive Works at Montreal.

I imagine they give the Canadian railroads preference, but I notice these companies are making units for overseas shipments.

We have to fit into their programme, but I know that the Canadian National have certain deliveries promised from Canadian plants.

I think, Doctor Evis, the twenty-year figure you mentioned as having heard, was based on the number of locomotives in Canada, and the number which have been produced each year, up to date.

MR. BELYEA: The production rate must be up, to get it done in from five to seven years. Possibly you do not need as many diesels, as you do steam locomotives.

MR. CAPPER: I would not want to comment on that.

MR. ELLIOTT: Do you get many complaints from residents in the neighborhood?

MR. CAPPER: I very seldom get a complaint. I do get the odd one, and quite often, when I have taken the matter up with Mr. Boyle, we have found that it is the people on the other side who have/complained.

They see a steamer going up the river, and by the time the smoke and fumes from the steamer drift across to them, it is, of course, blamed on the roundhouse here.

MR. MURDOCH: Can you tell me if the roundhouse was here before any of the residents arrived?

MR. CAPPER: Yes. It has been here anywhere from 50 to 65 years.

When this district first began to be opened up, the railroads came, and later they built the city of Windsor. There were only a few grist mills, and logging camps in the vicinity before that time.

MR. BELYEA: I think the important part, as far as this Committee is concerned, is the information that these steam engines can be controlled, if they are properly fired.

Possibly in some other centres the railroads are not co-operating as well as they could.

MR. CAPPER: You have the blowers on the locomotives.

As Mr. Boyle knows, the smoke consumer on the firebox was a Canadian National development.

MR. BOYLE: Most of the locomotives have them now, plus the door which can be opened to allow more gas to get down onto the flame to control the smoke. Of course, once in awhile, you have to force an engine.

THE CHAIRMAN: Do you have your own inspectors?

MR. CAPPER: We police our own equipment, but we have Mr. Boyle and his staff also.

We have found that some of the fellows have a tendency to relax, and do not remember where the smoke is coming from, and have not noticed where it is going.

THE CHAIRMAN: Do you penalize them?

MR. CAPPER: Whenever Mr. Boyle catches them, we certainly do. We do not let them "get away" with anything like that.

Mr. Boyle will check and send the chart in to us, and if it is the first time, a man is cautioned; the second time he gets demerit marks, and beyond that, the demerit marks are doubled.

DOCTOR EVIS (Secretary): What is the heaviest penalty attached to that?

MR. CAPPER: 59 demerit marks, and a man is out of a job.

If a man has accumulated 20 or so demerit marks for smoke emissions, and an accident happens on the road, and he was found partly responsible, another 30 or 30 demerit marks would leave him in a very precarious position. For instance, 5 demerit marks for the second offense, plus another 5, plus perhaps 10, and then plus 20. They quickly mount up, if the emissions are too frequent.

DOCTOR EVIS (Secretary): Are these demerit marks applicable all through his service?

MR. CAPPER: A man has to have 12 months perfect service, and then so many are lifted -- 20 a year-- after every perfect record for twelve months.

MR. MURDOCH: Have the train crews any instructions when they leave the Windsor district?

MR. CAPPER: No. They have to be governed by the rules of the city or town through which they are going. We have watched them going out of town here, and they have been tripped up just the other side of Walkerville. Mr. Boyle, or one of his men, has been out there and caught them.

MR. BOYLE: I have ridden on those engines, and have received wonderful co-operation while I was on them, but the minute I got off, they started sending out a cloud of smoke.

MR. MORNINGSTAR: What is the reason for the smoke?

MR. CAPPER: It is just a matter of getting their fuel-air ratio out of harmony. For the most part, it is the individual operator's fault. Actually, there is no excuse for it.

MR. ELLIOTT: Does that apply in the roundhouse?

MR. CAPPER: It is also true there, yes.

MR. BOYLE: Well, thank you very much, Mr. Capper.

THE CHAIRMAN: On behalf of the Committee, I would like to thank you, Mr. Capper, for your informative discussion this afternoon. You have given us some very valuable information.

---The Committee resumed the tour, and while enroute, the following proceedings were had:

THE CHAIRMAN: Mr. Boyle, suppose we get the authority from the Federal government to control the locomotives, what could we tell the railroad companies to do?

MR. BOYLE: We could prosecute them directly if they repeatedly violated the Code. All they would have to do would be to improve their operations. The equipment available at the present time is such that they could operate smokelessly.

THE CHAIRMAN: Then they could do something?

MR. BOYLE: It has been proven it can be done, and done well.

So -- and I know -- that it is being done by our neighbors across the river, and they have no difficulty in successfully applying their Code.

This also applies to lake shipping. When we get excuses, we become firm, because we know the answers, and we are not taking any of their "guff".

If they tell me that such-and-such is the situation, I want to know why. If they actually cannot

tell us, we endeavour to give them the necessary information to help them.

THE CHAIRMAN: In Toronto, it has been said that nothing could be done.

MR. BOYLE: As far as that goes, in Toronto they just use fancy terms, to make it appear as if they had tried to do something. It apparently is just a bluff to people whom they probably thought did not know anything.

They will point specifically to several communities in the United States, where it was claimed it was impossible, because it was economically unsound.

They forget one important point, that I, in my office, am in direct communication with those cities, and have the true information, and all the necessary data.

THE CHAIRMAN: The Canadian Pacific said something could be done, but the Canadian National railway said it could not.

MR. BOYLE: There you have two railroads disputing about what can or can not be done, which is just confusing the issue.

As I mentioned a little earlier, we have a similar situation as far as shipping is concerned.

Our biggest bugbear, as far as shipping is

concerned, is in the hand-fired operations.

From the available data up to date, one-half of the ships plying the river -- which is the busiest inland waterway in the world -- are hand-fired.

Let me give you an example. Last year, there were over 500 ships passed up and down the river, and 160 of those ships did not comply with the regulations -- during that year.

In that instance, we had more than 60 of those 160-odd vessels owned by just two Canadian companies. The rest of the vessels which did not comply, were owned by all the other companies which use the river to supply their services.

We can give you the names of the vessels, the names of the Captains, the engineers, in fact, anybody on any ship on this river, and, as a matter of fact, from the Gulf of St. Lawrence to the Head of the Lakes.

We can tell you the official capacity of any man on any boat.

We have not fooled about this. We have had the best of co-operation from the Technical Advisory Board. They have a group of men on the roof every year, every day, taking observations of every vessel going up or down the river.

It has been observed that when the wind is

from the north, the smoke from the engines and round-houses hits the residences.

THE CHAIRMAN: What is the best fuel to use for lighting up?

MR. BOYLE: Oh, they use good fuel.

THE CHAIRMAN: Could they use coke to light up?

MR. BOYLE: They did try that, but it mixed with clinkers when starting a fire, and it caused considerable difficulty.

Here, they line the firebox in the ship with green coal, and then put the oil burner in, and it ignites and burns off volatile matter.

That is the Hiram Walker plant (indicating). They put in a 70,000 pound boiler this week, which is doing an excellent job.

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Here (indicating) is the Ford power plant on the right. It is the largest privately-owned steam generating plant in Canada. It has sufficient capacity so it could supply power to several fairly large cities.

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MR. BOYLE: This (indicating) is the coal dock. It has a capacity of around 160,000 tons of coal.

DOCTOR EVIS (Secretary): What about Mr. Caunt's

smokeless fuel?

MR. BOYLE: He has been working on that for a number of years. He has an idea, and is trying to get somebody to back him. I cannot recommend him to anyone, because it would put me "on the spot".

I think he has an idea, but I do not think we are the ones to put it on the market.

It is a low-temperature method of mixing gas.

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Here (indicating) is the Ford power plant. It consumes 500 tons of coal each day. I think we will stop here now, and make a tour of this plant.

This is Mr. J. C. Bonham, Assistant Maintenance Engineer.

---Whereupon the tour was interrupted to visit the Ford power plant, where the Committee was met by Mr. J. C. Bonham, Assistant Maintenance Engineer.

THE CHAIRMAN: What is the nature of your operations, Mr. Bonham?

MR. BONHAM: We generate all our own power here. We have some cross-connection with the Hydro.

Coal comes in from the street, is pulverized, and is used in five boilers.

The first four are in the old part of the building, about which Mr. Linsky was speaking, and I think he was quite out of order.

I would like to know what they are going to do about the boats on the lake which cannot have as perfect combustion as we have. They also discharge their smoke so much lower.

The stacks about which Mr. Linsky was speaking, discharge 300 feet into the air.

The power house extension, completed two or three years ago, has the Cottrell system, which are aluminum cyclones, which are guaranteed to take out from 80 percent. to 90 percent. of the stack output.

On August 23rd, in Detroit, the International Joint Commission had another meeting, at which the Special Committees working on the effect of air pollution on health, and on corrosion of metals, and so forth, were to report.

That was the first time I have heard anything approaching finalization from the standpoint of health.

We have enough to live with now, and it is in our own interest not to let things get worse. I will say that the present smoke by-laws are very wanting.

There is just one little item to illustrate what I mean. They require a certain amount by weight to be taken out of the stack by way of emissions, and when they say "by weight" that usually means the larger particles.

However, they could take a great many large particles out, and leave a great many micron particles in.

A "micron" is one-millionth of a metre, and you can only see 50 microns, and it is only particles of ten microns or less which will get into the lungs.

Your legislation will have to take care of the fine particles. Those are the ones which do the most damage to health.

Perhaps we do not like to clean the dirt which comes in the windows and so forth, but the statistician at the meeting to which I referred, said it was borne out in Detroit, and he quoted two stations on this side of the river, one near the bridge, and one near the university, where the proportion of respiratory diseases at the Sandwich end, compared to the university end, was 13 to 8, and the amount of sulphur dioxide in the atmosphere was in exactly the same proportion.

They made tests in Detroit to relate the respiratory disease incidence to the amount of large particles, but there was no co-relation. It seemed to work out that it is the small particles which affect the health.

A member of one of those bodies asked the reporters present not to make any preliminary reports on

that. They want to check and double-check.

I want to say this; industry is expanding very fast, and if you want to put in corrective measures, you can do so, much more readily and much more cheaply, if you plan for it at the time the plant is built. If you have to add it to an existing plant, it is going to be much more difficult and much more expensive.

If you can spur your fact-finding bodies on to produce the reports so that you can act on them, it would be a very good thing.

Are there any particular questions anybody would like to ask?

MR. ELLIOTT: What do you think in relation to the exhausts? How much damage do they do? Is the gas from the diesel engines more dangerous than the coal smoke?

MR. BONHAM: I am afraid that is out of my field. You will have to go to the Technical Advisory Board of the International Joint Commission, and to the organization you have in Toronto, the Ontario Research Foundation.

They are very well equipped to do that sort of thing. They have the best equipment in the country.

MR. ELLIOTT: You feel that you are doing a good job?

MR. BONHAM: On the recommendation of Mr. Boyle's

department, and the Industrial Hygiene Division of the Provincial Department of Health, the Ford Motor Company of Canada has installed after-burners on each cupola at approximately \$600. each.

The after-burners developed one and one-half million BTU's per hour, and the consumption of natural gas is to consume waste hydrocarbons which formerly went out into the atmosphere.

THE CHAIRMAN: We appreciate your comments very much, Mr. Bonham, and would like you to know that, of all the people to whom we have spoken, in the course of our studies, you are one of the few who have made suggestions to us which really have some merit on a provincial basis.

You are speaking of the level of government to which we have to make a report, and on which we have to do something for the people of the province. So many others are only interested in their local situations, and that is exactly how they look at it.

What you have suggested as a way to improve the situation on the provincial level, is very well taken.

We found in the course of our studies, too, that the unseen gases, and the unseen pollution, are probably more detrimental to health than the ones you

can see.

However, it is necessary to start cleaning up the pollution you can see, and which the public can see, and then they feel you are doing something, and from there, you can proceed to the gas which you cannot see.

I would like to commend you and your people for the job you are doing, and the vast sums you are spending, and I feel that Windsor, and its excellent smoke-abatement officer, are setting an example for the other communities in Ontario, and I would like to thank you once again, and, with you permission, to adjourn this meeting.

---The Committee resumed its tour by bus, where the following proceedings were had.

MR. BOYLE: There (indicating) is one thing to which I would like to draw your attention. It is on the right, and is the multi-million-dollar Chrysler project which is just about completed. You will note it stretches from one corner to the next, and around the corner is a new extension to the boiler~~plant~~ which they put in last year, consisting of three new boilers, each of which can produce 100,000 pounds of steam per hour.

When the extension to the power plant was planned, they put in fly ash and dust collector systems

to eliminate the smoke problem here. These are running 92 percent. efficient.

The number of people employed in this plant at the present time is about equal to, or possibly a little larger -- than the Ford Motor Company. I understand their employment figures in the neighbourhood of about 8,500 people.

MR. MURDOCH: I think you are a little low in your figure, Mr. Boyle. I understand it is about 10,000 people.

MR. BOYLE: The amount of cars being turned out is such that they have three locomotives there, working sixteen hours a day.

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MR. BOYLE: You will notice down here to your right (indicating), down the track, that there has been sufficient influence brought to bear on the railroads here, to have them use diesel locomotives only.

MR. MURDOCH: I think the Canadian Pacific Railway at the station in Windsor is more dieselized than the Canadian National Railway?

MR. BOYLE: That is true.

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MR. BOYLE: Here (indicating) you will see the boiler house, which I mentioned earlier, with a

total capacity of one-half a million pounds of steam per hour. 500,000 pounds of steam is the operating maximum.

There are four boilers, capable of producing 100,000 pounds of steam per hour each, and three other boilers which have a maximum of 75,000 pounds each.

We call the boiler operation there practically perfect. You can see only a slight haze coming off of it. However, we would pass that as being o.k.

MR. MURDOCH: Does it get much worse?

MR. BOYLE: No. That is about it, unless they have a slip or power failure.

That will show you gentlemen something of the co-operation which has taken place between the industry and the city.

There has been approximately one-half a million dollars spent on this new installation, in curbing air pollution in the power plant.

THE CHAIRMAN: What is the total capital outlay?

MR. BOYLE: On the new extension, which was put in two years ago, it was \$32 million.

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MR. BOYLE: You will notice here to your right (indicating) as we are coming up to this plant, a pulverized-

fuel operation.

This plant has spent an enormous amount of money on improvement measures.

This is the Auto Specialties Company (Canada) Limited. The Plant Manager is Mr. Cantelon, the Assistant Manager, Mr. Foote, and this gentleman (indicating) is Mr. Ford McKay.

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---The Committee disembarked, and made an inspection of the Auto Specialties Company (Canada) Limited, accompanied by Mr. Ford McKay.

MR. McKAY: Several years ago, we were having difficulty, particularly with houses down wind, northwest of the plant, because our winds are, for the most part, northeasterly.

The stuff was being carried right over to the residential section over here (indicating).

The Company decided they were going to make some changes, and spent \$25,000 to make certain changes.

This gentleman, (indicating) is Mr. Andy Kadosky.

MR. KADOSKY: Are there any questions any member of the Committee would like to ask?

THE CHAIRMAN: Will you start from when you had the original set-up, with the storage system, and bring it down to the present unit system?

MR. KADOSKY: First of all, as I have explained to Mr. Boyle, we were running two heats/ⁱⁿ each of the one melting unit, which meant that we had to crowd eight hours of melting time into the one unit, which the central system was not quite capable of handling, and that, in turn, meant that the second heat, which would start at about a quarter to eleven in the morning, required that we push all the coal we could possibly get, to have the heat over by three-thirty p.m.

We were throwing a great deal of smoke, and partly-burned coal out of the stack, which we tried to curb as much as possible, but we had to push it. We were creating quite a nuisance.

Also, the central building put gas in the pulverized storage tank, which caused several explosions. That decided us to go to the unit-pulverizing plant we have now, which gives us very close control of our melting and complete combustion. I may add that it also does help us in our melting operations, in that we can regulate the hours of melting and "step it up" ending at a certain time, where we are going to be cooling metal.

DOCTOR EVIS (Secretary): You are saving coal? Formerly you used about 40 tons a day, and now you use about 25, on an average.

The coal now costs \$12.90 a ton, whereas it was formerly \$15.60 a ton in the other unit, and, at the same time, -- and this is important -- you do not produce any harmful effect on the community?

MR. KADOSKY: That is true. We have such close control of our coal feed, that as soon as the melting units are shut down, they start cooling off.

THE CHAIRMAN: Do you get any complaints about the melting unit?

MR. KADOSKY: We have not had any complaints concerning the melting operation. We have had the odd complaint regarding our boiler -- when we blow the tubes on the boiler.

We usually do that during the night hours.

DOCTOR EVIS (Secretary): How much did the change-over cost, the units and the melting furnace?

MR. KADOSKY: \$125,000.

MR. BOYLE: We are very happy now with the operation at the Auto Specialties .

In recent times, we have had only one or two complaints, and, of course, they were from the boiler-room operation. We sent them in a check note on it.

Insofar as general plant operation is concerned, we have no fault to find at all.

We had instruments set out around here, and we

knew exactly where the stuff was coming from, and that was of some assistance to the Auto Specialties in making this change.

They have co-operated wonderfully, and we are very happy about the situation at the present time.

DOCTOR EVIS (Secretary): Not only do they save coal, but they can use a cheaper type of coal?

MR. KADOSKY: Yes.

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MR. BOYLE: This (indicating) is the Canadian Pacific Roundhouse. That tall stack (indicating) on this unit here (indicating) is their boiler operation, which is off all summer long.

They are sending out No. 3 now, and that smoke is "really something", but you cannot prosecute a railway.

That smoke is another problem we have directly across here (indicating). It is the Regal products, a meat-packing plant. It is out of Windsor.

We are at the Canadian Pacific Railway now. This gentleman (indicating) is Mr. Stalker, from Toronto, their efficiency expert on combustion. He will give you a little idea just what is being done in the area, and the control which is being exercised, and possibly the amount of dieselization which is envisaged.

MR. STALKER: In the Windsor area, fires are

cleaned and held until the engines are dispatched.

The only fires which are lit, are after a boiler wash-out, or if, for any reason, they have to cool the fire.

As for dieselization; there are eight passenger trains a day, usually with diesels, and six second-class freight trains.

In the shops, for any lighting-up which does go on, the grates are lined with coal, and lit up with an oil torch.

Are there any questions any member of the Committee would like to ask?

THE CHAIRMAN: You still have some of the steam coal burners in the yard. We understand that the dieselization programme for all the railroads is going to require about twenty years.

How long do you think it is going to take?

MR. STALKER: I cannot give you a figure. Everyone wants diesels, and they are very expensive.

THE CHAIRMAN: What is the programme of the Canadian Pacific Railway?

MR. STALKER: They have been putting approximately from 70 to 80 units per year on the job.

THE CHAIRMAN: How many locomotives have they in Canada?

MR. STALKER: I will have to look up that figure. The western lines have the large proportion.

MR. MURDOCH: Do you feel you are doing a maximum job as regards control of smoke, fly ash and so forth? What about smoke consumers? Are there any on your locomotives?

MR. STALKER: The smoke consumer is just a jet which creates turbulence over the fire area.

MR. ELLIOTT: Is that the best you can do?

MR. STALKER: That is pretty fair.

MR. BOYLE: These people are complying with their regulations, Mr. Chairman. There is nothing we can do, with the situation as it is at the present time, to compel them to endeavour to improve on that. They are governed by regulations laid down by the Board of Transport Commissioners in 1908.

THE CHAIRMAN: If the Canadian Pacific Railway was under your jurisdiction, Mr. Boyle, would you o.k. that amount of smoke?

MR. BOYLE: No, I would not o.k. that. I believe -- and I think the Canadian Pacific does too -- that they would be able to do better, and they really do better on occasions.

MR. STALKER: It depends on conditions in the fire box. If an engine is banked, it can go several

hours without smoke.

There are so many factors in connection with air pollution in a city. Wherever you have a congestion of people, you are going to have air pollution.

MR. BELYEA: You should be able to ignite smokelessly.

MR. STALKER: It is a matter of getting it up to temperature. You can put your igniter in first, and bring up the air temperature, then put the fuel in.

The Canadian Pacific does that at Spadina, in Toronto, but there still is a smoke problem.

At John Street, they are steamed up from an outside source, and it registers 160 pounds of steam before it is lit off.

MR. MURDOCH: I suppose some of your firemen do not do as good a job as others? Do you give them demerit marks?

MR. STALKER: Yes, they are disciplined.

Gentlemen, this (indicating) is Mr. Whalen, the Assistant Superintendent of this area.

MR. WHALEN: If we had all diesels in here, we would not get any complaints about smoke.

MR. STALKER: The exhaust fumes from diesels are heavy and oily.

THE CHAIRMAN: Would the diesel fumes "mess up"

a washing, like coal fumes?

MR. STALKER: We have had trouble in that respect with the particular type of stuff we have had. I can realize that, since it got into my shirt, and it is still there.

If you gentlemen are ready, and it is agreeable to you, Mr. Whalen and I will take you on a tour of the yard.

---Whereupon the Committee toured the yard of the Canadian Pacific Railway.

MR. BOYLE: In one respect, we have done very well with the Canadian Pacific Railway. They have not done too well in handling smoke, but they have gone a long ways in regard to diesels. All of their passenger service, with the exception of one train, is dieselized.

About 50 percent. of their service is dieselized, and they have a number of diesel yard engines. That is more than you can say for their Canadian competitors, the Canadian National Railway.

I will say, however, they have made progress as far as possible toward the elimination of smoke, with the equipment they have at the present time.

Commenting again on the Canadian National Railway: while they have the equipment to control the smoke very effectively, they do not always follow it through. You can find that out very easily, by going

past the Canadian National Railway. After I have gone home, they immediately forget there is any control.

The ferries of the Chesapeake & Ohio, will not be in operation after the beginning of next month. They are going to send their freight cars through the New York Central tunnel. That will eliminate all the coal-burning ferries on the river.

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MR. BOYLE: That (indicating) is Bradings Brewery. They are just changing boilers. They have not the "bugs" ironed out of this new unit as yet.

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MR. BOYLE: If you look down the river, at Parke-Davis, you will see they are having a little trouble.

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MR. BOYLE: There (indicating) is a boat which was just changed to oil. You cannot see any smoke coming from it at all.

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MR. BOYLE: We are going to continue down through the industrial section.

This foundry (indicating) is the Walker Metal Products Limited, foundry. The General Manager is Mr. F. N. Huechan, the General Superintendent is Mr. Harvey Miller, the Maintenance Superintendent is "Win."

Danby, and the President is Mr. H. N. Gregory.

If you like, we can make a short tour of the foundry.

---The Committee disembarked, and toured the Walker Metals Products Limited foundry.

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MR. BOYLE: There is just one observation I would like to make at this time, and that is I believe we have the cleanest city in Canada, air-pollution-wise, and smoke-control-wise, of any comparable city of its size.

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---Whereupon the Committee returned to the Norton-Palmer Hotel, at which time it adjourned, to reconvene, in the City Council Chamber, City Hall, Windsor, Ontario, on Friday, November 25th, 1955, at 10 o'clock in the forenoon.

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P R O C E E D I N G S

OF THE

SELECT COMMITTEE, APPOINTED BY THE ONTARIO
LEGISLATURE, TO ENQUIRE INTO CERTAIN MATTERS
AND LEGISLATION REGARDING SMOKE CONTROL AND
AIR POLLUTION, IN ONTARIO.

Mr. A. H. Cowling, Chairman,
Presiding.

Dr. Frederick Evis, Secretary.

—0—

VOLUME XVIII

Friday, November 25th, 1955.

Windsor, Ontario.

—0—

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E I G H T E E N T H D A Y

Windsor, Ontario,
Friday, November 25th, 1955,
10:00 o'clock, a.m.

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The further proceedings of this Committee
reconvened pursuant to adjournment.

PRESENT:

Mr. A. H. Cowling, Chairman,
 Presiding.

Messrs. Morningstar,
 Elliott,
 Murdoch,
 Gordon,

Dr. Frederick Evis, Secretary.

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APPEARANCES:

Mr. Harry Belyea,	Industrial Hygienist, Department of Health, Ontario.
Mr. Samuel C. Boyle,	Chief Smoke Inspector, Windsor, Ontario.
Mr. J. W. Garrett,	Secretary of the Smoke Abatement Advisory Board, Windsor, Ontario.
Mr. B. Linsky,	Chief, Smoke Abatement Bureau Detroit, Michigan.
Mr. W. A. Caunt,	Consultant, Windsor, Ontario.
Mr. Arthur Cole,	Representing the International Joint Commission.

Mr. John Adair, Representing the Local
 Union of Railway Firemen in
 the Windsor area.

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THE CHAIRMAN: Ladies and gentlemen, we will bring our meeting to order.

As you know, this is an all-Party Committee of the Ontario Legislature. All Parties are represented, and this is a public hearing, and we will be very pleased to hear from anyone who has anything to say, which will be helpful to us.

If you speak, I would ask you to give your name to our Secretary, and a list will be kept in the order the names are received.

I think perhaps the first presentation we will hear, will be from Mr. S. C. Boyle, Chief Smoke Inspector, of the city of Windsor.

If he is ready at the moment, I would ask him to present his brief at this time.

S A M U E L C. B O Y L E,

Chief Smoke Inspector, Windsor, Ontario, appearing before the Committee, but not being sworn, testifies as follows:

BY THE CHAIRMAN:

Q. Mr. Boyle, we will be very glad to hear anything

you have to present to us.

A. Mr. Chairman and gentlemen of this Committee; it is a pleasure for me, at this time, to be able to present a brief to you on behalf of the city of Windsor.

Before going into it too deeply, however, I will distribute some copies of the brief. If there are not enough to go around, I think I have some more in my office which can be secured later.

The following is a brief respecting air pollution in the Windsor area:

" A smoke abatement and air pollution programme was started in Windsor in 1948 with the appointment of an inspector and an Advisory Board to assist him in drawing a by-law to regulate the control of smoke, dust and fly-ash, etc.

At this time, it was found that in order for the city to have an effective by-law, it would have to comply with the enabling legislation in the Municipal Act and it was, therefore, necessary for the city to ask the Provincial Government to enact such legislation allowing a city of our size to put into effect such smoke control regulations. This Bill was number 138, an Act to amend the Municipal Act allowing cities of population of not less than 100,000 to control the emission of smoke,

etc. This was brought into being in the third reading in the Legislature on April 1st, 1949.

It was not long, however, before the department ran into difficulty in enforcing their by-law. The problems that arose almost immediately were:

(1) Vessels plying the Detroit River.

(2) Railroads.

With reference to vessels plying the Detroit River, it must be understood that this is an International waterway and there being a number of ships which are of international registry, it was found that the legislation that we have in the city did not cover vessels plying the International waterway and was something that would have to be considered by another authority.

With reference to the Railways, it was found that action by cities or individuals against railways could only be taken with the permission of the Board of Transport Commissioners in Ottawa, and that we were unable to prosecute directly, any violations of our by-law until such times as this was processed through the Board.

In order for us to have a complete picture of these problems, we are going to treat them separately in this brief, and, therefore, we shall first consider what was done in regard to the vessel

problem.

Our good neighbour, the City of Detroit, to the north of us, was having similar difficulty with ships plying the Detroit River as we here in Windsor were with regard to smoke, and as neither one nor the other could do too much about it, representations were made to our respective governments, asking for assistance from the International Joint Commission in solving this problem. As a result of this representation by the Cities of Windsor and Detroit, the Terms of Reference was instituted in January, 1949 and given to the International Joint Commission.

The International Joint Commission asked its Technical Advisory Board to set up the necessary equipment to make a study of the conditions in the Windsor-Detroit area. This study is still being pursued. The United States Section of the Technical Advisory Board to the International Joint Commission did not cover as large a field as was made in Canada by the Canadian Section of the Technical Advisory Board to the International Joint Commission and as a result, their information, to a large degree, was supplied by technicians and a staff of the Detroit Smoke Abatement Bureau.

In Windsor, however, we had a very satisfactory arrangement in that the Canadian Section of the Technical Advisory Board set up a laboratory in this city along with a competent staff of scientists and chemists. This group is under the direction of Dr. Morris Katz of the Defence Research Chemical Laboratory, Ottawa, and Dr. G. A. Cave, Officer in Charge of the Technical Advisory Board, Windsor Laboratory."

Doctor Katz has now retired and the Technical Advisory Board is now under the direction of Dr. Cave.

"All of the initial preparations were completed so the study was fully organized early in 1950.

There is one thing I would like you to understand, however, that insofar as air pollution is concerned, neither the Technical Advisory Boards nor the International Joint Commission have any authority to enforce any requirements on air pollution but may only recommend to their respective governments a solution to the problem of what may be pollution from vessels or pollution which may possibly be a trans-boundary problem.

Since 1950, it has been found that through the co-operation by American and Canadian Shipping Organizations, there has been a decided reduction

in the amount of smoke, etc. from vessels plying the Detroit River. A considerable amount of data is available as well as the method used in reducing these emissions.

In order that you may understand just what did happen, the duration of excessive smoke of # 3 Ringelmann and darker amounted to about 51% of the time in 1950 and in 1954 this figure was decreased to 11.8% of the total time, or an improvement of about 77%."

If you will allow me to break in here once again, may I say that that is giving us a very nice looking picture.

However, it is not all as good as that. When we begin to break it down further, you will see where some of our present difficulties come into the picture, and there was a great deal of this stuff I was not able to put in the brief, because of time involved.

However, it will be available before you, as we have arranged for it.

The brief goes on:

" For your information, may I say that we have a year to year accumulation of data on smoke emission by vessels in this area since the study was started in 1950.

As a result of studies being carried out by the Technical Advisory Boards to the International Joint Commission, a considerable amount of interest has been created in other fields with specific reference to air pollution and its effects on vegetation, health and corrosive damage to materials of various types.

Two years ago, a study was made in the Windsor-Detroit area of the effects of air pollution on vegetation. This is reported in the pamphlets you will receive."

I will distribute these right now, if it meets with your approval. And, again, if there are not enough, I have some more in the office. (See Appendix "A").

Then the brief goes on:

"There has also been a study on the effects of air pollution on the health and welfare of individuals in the Windsor-Detroit area. The results of this study have not been completed, but it is expected that you may possibly get the results of this from the Department of Health and Welfare, Ottawa, next April.

There have been a number of observations made of readings taken with reference to the emission

of exhaust gases from various types of internal combustion engines in the Windsor area and we do feel that the time is not too far away when some control over this type of emission will come into effect. In this respect, an extensive study is being made by the Automobile Manufacturers Association and some data is available at the present time regarding their findings.

We now consider the Railroads as our second major offender over which we have no control. As has been earlier mentioned, we must ask the Board of Transport Commissioners' permission to prosecute these roads when they violate the city's by-law.

Insofar as smoke violations are concerned, we can only lay information against these railroads if they violate what is presently known as General Order # 18, and as this Order was brought into effect in 1908, you will understand that it has become quite obsolete and most certainly does not comply with the request in our City By-law regulating atmospheric pollution.

We have in this area, the following railways:

- (1) The New York Central System
- (2) The Wabash Railway Company
- (3) The Chesapeake and Ohio Railway Company
- (4) The Essex Terminal Railway Company
- (5) The Canadian Pacific Railway Company
- (6) The Canadian National Railway Company

The New York Central System is almost complete in its dieselization programme and has only three steam locomotives which work on the outside boundaries of the City.

The Wabash Railway Company is completely dieselized which includes several diesel yard engines.

The Chesapeake and Ohio Railway Company is completely dieselized.

The Essex Terminal Railway with five operating locomotives has only one steam operated unit on a part-time basis."

BY THE CHAIRMAN:

Q. Mr. Boyle, will you tell us what the "Essex Terminal Railway" does -- just briefly?

A. The Essex Terminal Railway is a local railway which, in connection with the other railways in the area, performs certain services in the area.

It travels from Windsor as far down as Amherstburg. It is a connecting road.

May I also say that we did have, at one time, a terrific problem with this little road, but may I add, on behalf of the Essex Terminal, that it was the first railroad in the Windsor area to bring into operation, a diesel engine. That was directly after the war.

Now, the brief goes on:

" The Canadian Pacific Railway Company has all of its passenger operations dieselized with the exception of one train. Its freight operations are about 50% dieselized and it has a number of diesel switch engines in the yard areas.

The Canadian National Railway has been exceedingly co-operative by seeing to it that they have not one piece of diesel equipment in this area and apparently are not interested in putting one here.

The Smoke Abatement Departments of the Cities of Hamilton, Toronto and Windsor have been working on some amendments to the Railway Act, a copy of which will be presented to you."

When you are going through these copies, I would like you to consider that the information which has been mimeographed of these reports, is of a meeting which was held by the Toronto group, on behalf of Windsor and Hamilton, with the legal authorities of the railways, and the legal authorities of the city of Toronto, and any specific references which are made in this report are of conversations which took place between those particular people in Toronto. (See Appendix "B").

Now, to continue:

"It is only the beginning, but may I point out that insofar as Windsor is concerned, we would

at the time

still be in difficulty by reason of the fact that the minimum smoke requirements in this proposed amendment does not comply with Windsor's by-law but as there are other things in this amendment which may assist us, we may probably accept it as it is for the present in view of getting some control over these railways.

Before closing these comments on the railways, may I be very specific in making this statement; that railways in Canada which have subsidiary Companies in United States are required to comply with any of the regulations in the United States and do this to the letter. For instance, in the City of Detroit, a subsidiary to the Canadian National Railways which is called the Grand Trunk Western has completed its dieselization programme to almost 80% which is not true of their operations on this side of the river."

If I may break in here once again, may I say that I may find some criticism of that statement, insofar as percentages are concerned, but I was given that "off the cuff" by the railway representatives, and it may be a little far-fetched. I am not just too sure of that.

BY MR. ELLIOTT:

Q. According to the report we received on the

other side of the river, it is not quite accurate.

A. That is why I brought that up.

Then the brief goes on as follows:

" It has been indicated to us by Railroad officials that they are following a programme similar to that in the United States governing United States Railways but in our close association with the United States authorities, we have found this to be definitely untrue and that railroads in the United States do comply with local authorities and as you know, we have not had this full co-operation by Railroads in Canada.

In concluding this brief, might we say that insofar as the effectiveness of our programme in Windsor is concerned, generally speaking, we have had wonderful co-operation from industry, commercial enterprises and private individuals.

It has never been necessary to date to prosecute any of these people and we are very happy for this. We have been questioned by these people from time to time, however, as to why we do not institute proceedings against either railways or vessels plying the Detroit River, and as you will have observed in your tour of the city that for the most part, our problem exists from that

section over which we have no control.

Another problem we have from time to time is smoke and air pollution that comes from neighboring municipalities. There is not much we can do at the present time and it is in this particular instance where we do require some assistance from an outside source. If your body could recommend to the proper authority that such legislation be enacted that could give us some authority from neighboring municipalities with reference to air pollution and smoke abatement we would be very pleased. While these nuisances are not too frequent, there are occasions where those living in the Windsor area are definitely annoyed by emissions coming from areas over which Windsor has no control.

In closing, might I say that in the last five years, Windsor has been fortunate in being able to accumulate a great deal of information regarding air pollution and smoke control in this area with the competent assistance of the Technical Advisory Board to the International Joint Commission. Might I say, therefore, that if there is information that has not been covered in this brief that I can give you, I shall be glad to do what I can in supplying it.

If you require any assistance in any manner with reference to air pollution and smoke control and you feel we can assist you in Windsor, we in this area will be glad to do what we can in putting your programme into effect."

I wish to thank you, Mr. Chairman and gentlemen.

THE CHAIRMAN: Thank you, Mr. Boyle. Are there any questions any member of the Committee would like to ask of Mr. Boyle while he is here?

MR. ELLIOTT: Mr. Chairman, I think this question has been asked several times before, but I do not think it has ever been asked of Mr. Boyle.

BY MR. ELLIOTT:

Q. Mr. Boyle, you have had good experience with diesels. How do you find these diesels? Do you find the same old smoke conditions from diesels as with the coal-burning locomotives, or are the people quite happy about it?

A. That is one of the things which seems to be accumulating at the present time.

You will recall that in one of the yards, there was a separate yard for diesel equipment. I think you saw that yesterday.

The other -- which you did not see -- is somewhat smaller, but by reason of the fact that it is

below street level, the gases from the railway, when the wind is favourable, carries these fumes up over the right-of-way, and into the neighbouring homes, and they definitely do have a problem, most specifically, especially in the summer time, when people, of necessity, have to have their windows open more than at other times, and we have had complaints that they cannot sleep.

It is a particularly bad situation for youngsters and, as I said in my brief, the time will not be too far away when something will have to be done about it, and then, to what extent it is detrimental to the health and welfare of individuals has yet to be determined. It is very obnoxious, and people are finding fault with it.

BY MR. ELLIOTT:

Q. In other words, it is not the whole cure? Diesel engines do not cure everything?

A. That is true.

Q. In other words, diesel buses -- if you are following them in your car -- have you any complaint about the fumes getting back into your car when following diesel equipment on the highways, or have you any complaint in the city about the fumes which are somewhat of a nuisance?

A. Yes, there are complaints which come in of that type, but the particular type of legislation we have

at the present time does not allow us, in this country --

Q. I notice in this brief, you have not mentioned it, and I wondered if you felt it necessary to add that to your recommendations?

A. I do.

Q. That is, the nuisance you have found from diesel equipment?

A. Yes.

And as I told the Secretary and the Chairman in a discussion, time did not allow me to elaborate on these things as fully as I would have liked to.

I would have liked to have broken this down into several sections, but if I had done that, as I would have liked to, you would have been here all day.

As I said, we will be giving you that when it is available, and you will have it in due course.

Q. Under the circumstances, we will only make an interim report to the Legislature next Session, and I think, Mr. Chairman, our Smoke Abatement Officer in Windsor should be called before the Committee, either here or in Toronto, to bring this Committee up-to-date on diesel legislation we might recommend for this area.

Do you think that would be a fair way of doing it?

A. I will accept that.

THE CHAIRMAN: Are there any further questions to ask of Mr. Boyle?

BY MR. GORDON:

Q. On page 4, paragraph 3; will you explain that paragraph? It reads:

"The Canadian National Railway has been exceedingly co-operative by seeing to it that they have not one piece of diesel equipment in this area, and apparently are not interested in putting one here".

A. I think that is self-explanatory. They have not been too co-operative with us. We have had some difficulty with them.

Q. You say they have been "exceedingly co-operative"

A. Yes.

Q. They have not co-operated, very definitely?

A. That was as, if I may say so, a slur.

BY MR. MURDOCH:

Q. I would like to ask a question about the joint Order No. 18, issued by the Board of Railway Commissioners. That was not acted upon?

A. No. As a matter of fact, there has been a request, which is on my desk at the present time, to put this before Council in the Windsor area, to see if it is acceptable to them as it stands at the present time, together with our recommendation as to whether they

would act on it.

Q. How long ago was the meeting held? It seems that the parties came to an agreement which appeared to be satisfactory, as regards smoke control?

A. Yes.

Q. Do you think something will be done by the Board of Railway Commissioners, from your experience at that meeting?

A. That is very hard to say.

Our experience in pursuing this programme regarding Toronto and Windsor, together with Hamilton, in this study, has been a hard nut to crack.

There is something I would like to know at this time. It has not been mentioned here, and I think it is fair that it should be.

Your engineer, Mr. Belyea, was in this group on this study, and he put in a great deal of time and effort, and it certainly was appreciated by the three cities, the work which Mr. Belyea did in this regard.

He was able to converse with officials in other cities who were not able to attend these meetings.

There was an occasion also when I had the opportunity of meeting Mr. Plamondon, who was down there from Montreal, and he advised me their Smoke Abatement Branch was very much interested.

However, I would like to say in that regard, that Mr. Belyea's interest in this matter was "really something".

BY MR. ELLIOTT:

Q. Did you ever communicate with the Board of Transport Commissioners yourself?

A. The committee did not, but I have had some direct communication with them in reference to what methods we should use to prosecute, but we never followed it through.

Q. You never recommended an amendment to their legislation?

A. No. We thought it would be more effective, doing it as a group.

Q. Has anybody, that you know of, ever suggested they amend their legislation?

A. The only thing I know is just by word of mouth and hearsay, saying that it had been found necessary to make the change.

Q. Could it be possible that up to this time nobody has really approached them?

A. That is right.

Q. And nobody has put anything forward for them to do anything about it? It seems to me, they are not to blame, because they have not been approached.

A. That is right.

MR. ELLIOTT: I think we should make an approach to that body just as soon as possible, to help the municipalities along that line.

THE WITNESS: May I point out something for your information, Mr. Chairman and gentlemen? I think it is something you will have to consider -- and the Board will tell you this -- that it may be necessary, by reason of the fact that the Board controls railways throughout Canada, that we may have to have a representative group of all cities in Canada backing us up in this.

I am afraid they will not accept a comparatively few from the province of Ontario, and make these necessary changes. I think it will have to be a representative group of cities which are having trouble.

BY MR. ELLIOTT:

Q. Have you anything from Montreal, or Vancouver, or Winnipeg?

A. It is just in the discussion stage, but I did have the opportunity of talking with Mr. Plamonden in Montreal within the last month, about their situation down there, which is "really something", and he said they will act with us, one hundred percent.

Q. You feel the other provinces which have similar problems should join with you, and they should give us

their support, if necessary.

A. With the exception of the communities in British Columbia, where they have been using oil services for a number of years.

I think Calgary, Winnipeg, and all of these places -- I do not think we will have any trouble with them. I think we would get their backing one hundred percent.

Q. That is something which is brought out here. I never heard of that before. I thought they had been approached several times, but it could be possible they never have been, and we have been more or less grumbling about it.

THE CHAIRMAN: If there are no further questions--

MR. BELYEA: I wonder if Mr. Boyle could tell us of some of the communities over which he has no control.

THE CHAIRMAN: Which are offensive?

MR. BELYEA: Yes.

THE WITNESS: These communities over which we have no control are not communities across the Detroit River. They are communities directly surrounding the city of Windsor.

BY MR. ELLIOTT:

Q. They are on the Canadian side of the border?

A. Yes; that includes Sandwich East and Sandwich West in particular, and, of course, there are other communities around the area, but those two communities are the ones we have specifically in mind.

Riverside, for instance, -- we have no problem there, because it is primarily a residential community, but these two other communities -- I do not want to find any fault with the communities, you understand -- but if the programme proceeds in the community as it is doing at the present time, and it becomes more and more industrialized, the peculiar wind problem we have in this area would probably increase our pollution problem.

We have one industry in Sandwich West at the present time, over which we would like to exercise some control, in a manner of speaking, by reason of the fact that it is across the street from the Windsor border, and of course, the Windsor area is reasonably heavily domesticized there; all these homes are around this area, and they get the full benefit from this industry, because they are downstream, wind-wise from that area of gas pollution.

It is not only a smoke problem; it is a pollution problem, and there is nothing we can do about it.

BY THE CHAIRMAN:

Q. I think, Mr. Boyle, that is one of the important

considerations of the Committee, that is, the matter of air pollution and smoke control does not abide by districts or lines, or city areas, or anything else. We have to take a broad look at the whole picture, and your picture in a given area, and endeavour to proceed to recommend the type of legislation which will give centres some control over any area which might be polluting another district.

I think you have a good point there.

MR. MURDOCH: Mr. Chairman, Mr. Boyle, in his brief, mentioned that his work would be more effective if there was more control over the vessels in the Detroit River, with respect to neighbourhood municipalities, although we realize, from our trip around the city, that there are problems other than railroads.

I wonder from his experience in his department, if he could give us some idea of the complaints which come to him, and how many complaints come about the three sources I have mentioned, over which he has no control, as compared with complaints of those under his control, or over which he may have some measure of control.

THE WITNESS: I did not bring any figures with me with reference to these separate complaint sources, Mr. Murdoch, but I will give you a general idea, and it

is reasonably true.

In regard to the problem we have specifically on Riverside Drive, down here (indicating), we are having almost a continuous stream of complaints with reference to the problem in connection with the Canadian National Railway section down there.

May I say that on a somewhat lesser degree, since there has been some improvement throughout the river length within the city limits, that is also pretty well along the river, but may I point out at this time that to answer -- and we have the official record -- your question, the assumption is there will be no more operation of the ferry boats by the Chesapeake and Ohio Railway. They will use the tunnel for the movement of their freight traffic -- that is, the New York Central tunnel -- and the coal-burning ferries will be dispensed with.

THE CHAIRMAN: I think the citizens generally will be very pleased to hear that, judging from the remarks of those with whom I have talked in the last few days.

THE WITNESS: May I say also for the record that within the last week the last ferry to change to oil has been one-half completed. I am speaking specifically of the steamer "Detroit", which is one of

the steamers the Wabash Railway has changed to oil, since this department started some years ago.

They tried everything in the book -- and I am sure Mr. Linsky can verify that -- to try and overcome this problem, which was terrific.

We have some photographs I could show you, where this whole area was blacked out by the smoke from these vessels.

They are now oil-burning, and we now feel that was one of the largest problems we have overcome yet, and it will be a smokeless operation from here on in.

Then, another thing which I think the residents in this area, as well as in Detroit, will be very glad to hear, and that is the two vessels operated by the Canadian National Railway have been oil-burning for some time, but they are used for freight service only.

As I have said, in regard to the complaints I have received, they are probably in the following order; the railways first; vessels plying on the Detroit River, second; and, thirdly, we have the complaints coming from the areas outside the city limits concerning industries which do, from time to time, create a very stinky nuisance.

These complaints do not come in too often, but when they do come in, they are really bad.

BY MR. MURDOCH: I am glad that information is available. The point is, if there is any provincial legislation as a result of our report, where there are offices, such as Mr. Boyle's, in cities, I presume when they get a complaint, they give not only the date, but where it comes from, so in a future time we will get to the point of knowing where the specific complaints come from, as well as from our own observations.

I think that is very important information.

BY THE CHAIRMAN:

Q. I think, Mr. Boyle, that one of the things with which we all have to be concerned and to which we are looking forward, is the completion of the St. Lawrence Seaway, and at that time, if something is not done, the increased traffic from the great inland seaway here, will be much greater than it is now, and if we do not take steps to get some control over the coal-burning ocean ships, we will be in a very dirty situation, will we not?

A. That is something with which we could deal for some time, but I will give you a little picture of what is indicated at the present time. I think I should do that.

As you probably understand, we, in Windsor and Detroit, have been fortunate enough to be able to

attend, and have been invited on many occasions to attend, meetings of the International Joint Commission with reference to this amendment,,which will affect the International Boundary.

The most recent meeting I attended was held in Ottawa in October, and there has been issued to the legal authorities in Canada and the United States, who are directly connected with the Federal governments, a method of determining the legal procedure to follow with respect to those vessels, which is to be brought into a meeting which is to be held in April in Washington, to be presented to the International Joint Commission, so they might present it to their respective governments, to bring every district in to control these vessels.

I think the handwriting is on the wall for them.

Let me give you an idea that has been indicated recently, and that is, when -- and this is supposed to happen in 1958, I understand from information I have -- that when the first vessels come up the St. Lawrence under this new scheme of the St. Lawrence Deep Waterway, they will have to comply with certain governmental regulations, which I understand will be under the jurisdiction of the International Joint Commission.

They will have to comply with all the requirements

of shipping, and it has been suggested by Windsor and Detroit, that when they comply with these regulations, they will also comply with the air-pollution codes, which are in effect throughout the Great Lakes chain, not just for Detroit and Windsor, but from the beginning, to the Head of the Lakes.

BY THE CHAIRMAN:

Q. You mean the local codes?

A. Yes, I mean the local codes. And we believe the codes will be such that they will be easily adaptable for all shipping.

There are regulations which could be laid down, and there would be no hardship in following them through.

May I also point out, that, for the time being, these types of vessels which come up the river, are mostly of foreign registration, and there are a great many of them, but we have had not too much of a problem but as time goes on, we may have some difficulty.

That is why we asked that when the time comes that these vessels are coming up here, they do conform with the existing code, throughout the territory in which they pass, on both sides of the river.

We do not anticipate any trouble.

BY MR. ELLIOTT:

Q. You think the foreign ships are doing a good job?

A. Yes. We have a record of every vessel which goes up or comes down the river.

Q. Our own vessels are the worst?

A. Let us be more specific; our Canadian vessels are the worst offenders.

BY THE CHAIRMAN:

Q. If the same co-operation exists when the Seaway is completed, that is, co-operation between Ontario and the Federal government, and between the Federal governments of Canada and the United States, and the New York State Authorities along the border, we will be able to tackle this thing on a good, sound, co-operative basis, and now is the time to be laying plans for that, as you have suggested.

A. Yes.

BY MR. GORDON:

Q. Is Windsor affected in any way by pollution from the Detroit industries down the river, such as the Rouge plant?

A. Well, let us be fair in this also. You say, "the Rouge plant"; that is not in Detroit, and is not the responsibility of Detroit.

I will be very explicit in the problem we had very recently.

In the lake, they have what they call "Zing

Island", which is within the city of River Rouge.

As recently as July and August, and so forth, we had a very definite problem in our Ward 5 section, which is the western section of the city, in that they were having a very stinky condition there, and we determined it was a phenol emission.

We brought this up in some of the meetings we had with the Technical Advisory Board of the International Joint Commission held in August, in Detroit, and it was just thrown on the table as a point to be discussed.

But almost immediately we had an offer to see what could be done in ironing this thing out.

We did not want to see this thing go through the Advisory Board before we could see what could be done ourselves.

This was the suggestion -- and it was Mr. Linsky's suggestion -- that we get our Technical Advisory Board together -- that is, our Advisory Board in Windsor together -- and we wait upon the Detroit Advisory Board, and go over this matter together, which we did.

In turn, there was a committee appointed from the group, and the Chairman of the committee arranged to have a meeting with the Mayor and the City Engineer in River Rouge to see if we could get something tentative

from them.

That was arranged, and that meeting, in turn, decided that we should invite to a round-table, officials of the Company. That also came to pass in time.

The net result was that if we -- that is, the city of Windsor -- had any more complaints -- they gave me a specific telephone number to call, and they would see why this was going on.

In other words -- to qualify this -- you must understand they made some changes in the plant. They were ordered to desist dumping phenol-laden material into the waters.

They had to get rid of this stuff somewhere, and what was being used of this water was being used to quench the coke, but it was not quenching this, and phenol was to be evaporated into the atmosphere, but there was a "bug" in it, and they did not know it, but when the complaint came in, "Quick as a bunny", and they found the trouble, they corrected it, and after we had that meeting, we have never had a complaint since.

That is the kind of co-operation we have had, and we want to have it that way.

BY MR. ELLIOTT:

Q. This is one of our problems: back home, in Hamilton, where we have the mountain, the diesel machines --

and particularly the buses -- have created quite a problem, as regards automobile drivers and pedestrians.

Do you have any complaints from pedestrians or drivers in regard to diesel fumes, when following the buses or trucks?

A. We have had some complaints, but when the diesels do not throw out any colour, there is nothing we can do about it.

It does not matter whether it is a bus or truck or locomotive; if they are smoking extensively, they are not being properly operated.

Q. You do not have any real bad problem here of that type?

A. No, we have no code which would give us that privilege, but we will have trouble driving close behind diesel machines, particularly buses. We get the nauseating fumes from them.

BY DOCTOR EVIS (Secretary):

Q. Can you tell us anything about the collection of pollutants?

A. There may possibly be something in the plant operations which may carry up on occasion, and be picked up in some of the laboratory stations here.

Perhaps Mr. Cole, who is here from the International Joint Commission, might be able to say

something on that. I would not be too sure.

THE CHAIRMAN: Well, we thank you very much, Mr. Boyle, for presenting your brief, and giving us the additional information.

THE WITNESS: There is one other thing I might say before I close.

I have brought here some information on the study which was made in the Detroit area with respect to domestic incinerators.

These are here (indicating) for your information, and I shall hand them out, and I can assure you, you are perfectly welcome to them.

THE CHAIRMAN: Thank you very much.

---Mr. Boyle retired.

THE CHAIRMAN: Is there anybody here from the Chrysler Corporation?

We had a letter from the Chrysler people showing interest in our work, and if they have a representative here, we would be glad to hear from him at this time.

MR. ELLIOTT: I would like to ask one more question of Mr. Boyle, if I may.

THE CHAIRMAN: Certainly.

MR. ELLIOTT: Do you remember when we were speaking to the Mayor in Detroit, he said he was very

much interested in this incinerator problem, and I believe they have installed, or will instal, what they call "garbage grinders".

Have you ever used those in Windsor, that is, the garbage grinders in an attempt to take care of the smoke problem?

MR. BOYLE: Actually, that does not come under my jurisdiction, in any way, shape or form. That is under the jurisdiction of the City Engineering Department.

We have discussed it on one or two occasions, but not as fully as I would have liked.

The only indication I can give you is that it has been indicated that possibly if people interested in installing these garbage grinders in homes, there would not be too much of a problem. That is the indication.

However, I do not want to leave myself open for criticism.

THE CHAIRMAN: The communities surrounding Windsor, particularly those in this particular area, have all been notified of our meeting here today.

We have a letter from a man near Leamington, by the name of Mr. Gleason.

Is Mr. Gleason here? (No response).

We also have had a communication from Mr.

W. A. Caunt, of Windsor. I recognize him from his picture on his letterhead, and I would ask him if he would like to come forward and speak to the Committee.

MR. W. A. CAUNT: Mr. Chairman and gentlemen; I have very little to say.

First of all, I might say that since I have lived here, I have known Mr. Boyle and Mr. Linsky in Detroit, and I want to say how happy I was to hear Mr. Boyle this morning. I have heard him speak before, and I have also heard Mr. Linsky speak in Detroit, on different phases, and how beautifully they work together, and how they have dealt with the trouble in this area.

I want to give you a different thought on this whole thing. In fact, I have written to the Chairman, to Mr. Morningstar, and the Honourable Mr. Kelly.

I do not know whether any of you have received copies of my letter, but I mentioned there the fact that the Nova Scotia government had paid out considerable money in the plants in the town of which I have heard the most in the past. They are in trouble there over the coal business, as they are in Alberta.

I have prepared a short brief which I would like to present at this time.

THE CHAIRMAN: We shall be very glad to hear it.

MR. CAUNT: It is as follows:

" At the invitation of your Secretary, Dr. F. A. Evis, in his letter to me dated November 15th, I am most interested to make my representations to you on this occasion of your visit to the Detroit-Windsor area.

The following pages and photographs in this brief should be on record as convincing evidence that there is a complete answer to the 'smoke problem' in any city, and that is the application in a commercial way of the principle of removing or 'distilling' the smoke from ordinary 'soft' coal before attempting to burn it. In this way not only is the smoke recovered as usable rich gas and tar chemicals, but the resultant smokeless fuel in the form of Coke or 'Char' is found to be a fuel of remarkable efficiency if the coking process is carried on at about one-half the temperature used in steel-mill and gas-works coke-ovens.

Also the length of time which the coal remains in the heated ovens makes a great difference in the burning properties of the coke. In all standard coke-ovens the coal remains in a stationary mass for 12 hours or more to allow the very high temperature used to penetrate to the centre of the charge. But

if apparatus can be designed to keep the particles of coal moving, by some mechanical means, it is then possible to remove an even larger amount of tar but a smaller amount of gas, all within 30 minutes, and at one-half the temperature.

Incidentally, the gas is 50 percent. richer, and is suitable to either mix with natural gas or replace it entirely. This is a very attractive feature in view of the Ontario Government's entering into the financing of a large section of the Trans-Canada natural gas pipe-line, since it may point the way to the use of the enormous deposits of a low-grade coal known as Lignite which occurs in Northern Ontario within easy reach of the projected pipe-line. In any case these lignite deposits should be developed; they are owned by the Government, and Ontario is otherwise a 'coal-less' province, dependent upon a friendly but 'foreign' country for its entire coal supplies.

During the many years of study I have made of Canada's coal problems, and in that time the building and operating on tests three different pilot plants, which produced this smokeless fuel in satisfactory qualities from many kinds of American and Canadian coals, I have reached the

point where I feel that some definite plans should be made by the Ontario Government to use the third and present pilot-plant as a sort of Research Station, to find out how this 'low-temperature' coking principle can best be applied to conditions in the cities which are trying to overcome the smoke nuisance. This pilot-plant was set up here in Windsor by the Nova Scotia Mines Department, and fully tested on the five main varieties of the coal mined there. A highly-detailed official report was published, which I would be glad to make available to the Ontario Government, as well as my personal services in furthering the larger-scale development of these ideas on the better utilization of coal. Since, apparently, we are committed to importing all or most of our supplies of coal, we should at least be utilizing the gas and tar chemicals in it instead of complaining of that tar as a 'smoke nuisance'.

My conception of the manner in which this principle of so-called 'low-temperature' coking of coal, for the removal of the smoke in it, is that plants made up of multiples of my design of 'mechanical coke-oven' be built in certain strategic places or cities where the market for its products

would be available locally. I have in mind the very economical fuel situation which existed in the city of Guelph for many years, and may still exist there, for I haven't checked on this since about 7 years ago when I lived in Hamilton. This municipally-owned coke plant was originally built to furnish a dependable supply of manufactured gas, but the coke proved to be of such good quality that the entire output was always sold out, with sales restricted to Guelph citizens and some industries. The tar made a remarkably fine road dressing for city streets. However, that was a 'high' temperature plant, and as such was not nearly as flexible in its output of the various products as any workable 'low' temperature plant would be. The plant made handsome profits for the city, even though its gas was sold cheaper than at any other gas plant in Canada, while the excellent domestic coke was delivered at \$10.00 a ton.

While this problem of 'smoke abatement' is but a small part of the general subject of 'the better utilization of coal', I submit that it is worthy of serious and detailed discussion among those of us who have made a real study of it. I will be only too pleased to contribute my knowledge and

experience as may be requested".

In this operation (indicating) -- and they know something of it by this time -- they found, of course, that it is a machine really which can be built in great numbers, and set side by side with equipment such as coke ovens, which you may have seen.

Mr. Elliott should know that plant in Hamilton. It is a mechanical coke oven, feeding coal into a continuous drum which separates it in a continuous stream.

MR. ELLIOTT: It is a by-product?

MR. CAUNT: Yes.

MR. ELLIOTT: It separates everything?

MR. CAUNT: Yes.

MR. ELLIOTT: They are taking the chemicals out of the coal?

MR. CAUNT: They are taking the tar out of the coal, and the chemicals are in the tar. Following my brief, you will notice a reproduction of a letter which I wrote to the local paper, the Windsor Daily Star -- and they very kindly printed it for me, and ran off some copies for myself.

I have just come back from living in Hamilton for a number of years, and at that time the gas shortage was so severe -- this was back in 1942 -- that your government appointed a gas Controller, and later they

formed the Fuel Control Board, under Mr. Crozier, composed of four lawyers on the Board.

THE CHAIRMAN: If I may interrupt, may I ask if you have discussed this proposition with our Fuel Board?

MR. CAUNT: Oh yes, quite recently, and I have written to Honourable Mr. Kelly, but I did not receive any reply.

The people up north are interested in the fuel development, but they are not interested, apparently, in the government.

Let me say that I think there are a great many problems ahead of you.

THE CHAIRMAN: Our problem has strictly to do with air pollution. We are not concerning ourselves with the pipe-line.

MR. CAUNT: Yes, but you will be, I am sure.

Here (indicating) are three photographs showing typical smoke from a passing steamer. That is to say, two or three years ago, pictures were taken of a little plant set up by the Nova Scotia government.

I should mention something about this Nova Scotia government. Maybe the reason they wanted to set it up, was that some day they hoped to sell Nova Scotia coal down here, because they had lost some of their markets,

and the government subsidized them to a certain extent.

This (indicating) is a picture which should be enlarged. It shows a bright, sunny summer morning, and if you look up, you see a blue sky, but if you look down, you see the smoke, in spite of all the efforts of Mr. Boyle and his colleagues.

I had a reply from the Honourable Mr. Warrender recently, saying the Hydro is building a large steam station, and enough gas will come from that to supply the whole city of Windsor.

They cannot argue it before me, because I have the results.

The third is a set of pictures showing it as it was three months ago. The coke plants are out of doors, and are rained on and hailed on, and it is very hard to keep them going.

If the Ontario government wants to use it, if they will make me a proposition, like the one from the Nova Scotia government -- which got results -- I will be glad to discuss it with them.

There is one other little item. This was up for discussion in Toronto during the war, and Honourable Mr. Kelly is a member of your Committee, and I wrote to him, not on this recent occasion -- but in some way, Mr. McLaughlin -- is he still around?

THE CHAIRMAN: Yes, I think so.

MR. CAUNT: He was with the Midland Securities Company, and they wanted to put up some money in that connection, with the Nova Scotia government.

Then Mr. Frank Engel, who built this wonderful tunnel here, was interested. Honourable Mr. Cross was the Minister of Mines at the time, and I think the last paragraph should go into the record. It reads:

"I feel that Mr. Caunt has something to offer that can be of real assistance to the public of Ontario in the serious coal situation with which we have been, and are likely to be faced for some time, and that any time you or any of those members of the present Government who are devoting time to this heating situation can give to hearing Mr. Caunt's story would be well worth-while."

I do not know how much time you want to give to his. I understand you are going to Pittsburgh a little later. It was formerly called the "Smoky City", but it has been cleaned up a great deal.

Here (indicating) is an editorial from the "Pittsburgh Press". I have been down there a great many times. It was just eleven years ago when Pittsburgh first attacked the smoke problem.

This editorial is entitled "Opportunity Ignored"

and reads as follows:

"Someone is overlooking a great opportunity to found a new industry and make a lot of money.

Pittsburgh and a number of other cities have enacted strict anti-smoke ordinances. Throughout the country, men and women are in revolt against soot and grime, and are attempting to do something about them individually if not collectively.

Many householders and small commercial establishments will stop smoke by installing stokers, gas conversion burners, oil burners. Many will use coke, anthracite or natural low-volatile coal.

All these methods have their advantages, and their disadvantages. There is room in the picture -- plenty of room -- for a fuel that is smokeless and dustless; as easy to fire as ordinary coal, and not much more expensive.

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Such a fuel can be made of Pittsburgh District coal. One, called DISCO, has been made in relatively limited quantities for a number of years.

Several processes have been developed. In general, they consist of roasting the coal sufficiently to drive off the smoke-producing volatile matter. The resulting product is clean, smoke-free and

gives more heat per ton than ordinary coal.

If a company were to announce that it had ample quantities of processed coal at a reasonable price, customers would beat a path to its door.

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In Pittsburgh alone the market would be vast. To take care of consumers without mechanical firing equipment, thousands of tons of natural low-volatile coal will be imported from central Pennsylvania, at least for the next year or so.

Processed coal can compete with this natural low-volatile coal in price, and it's easier to use.

St. Louis, in the last year, used 354,115 tons of processed fuel (including coke), along with 529,235 tons of natural low-volatile coal.

Pittsburgh may be expected to use as much, after the ordinance covers private homes in the Fall of 1947. Allegheny County, with more population than Pittsburgh, is getting ready for a similar law.

And other parts of the country would take large quantities of a good processed fuel made of Pittsburgh District coal.

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It's a wonder to us that the coal industry of the Pittsburgh district doesn't step into this business itself, on a large scale.

It is rapidly losing its market in the home-heating field. Even before the current wave of smoke ordinances, new homes and many old ones were being equipped with oil or gas burners. The smoke ordinances will persuade many more to turn to competitive fuels.

Coal can't save all its market, because gas and oil have the additional advantage of being automatic. But it could save a large part of it by offering a smoke-free product at a reasonable price.

Opportunity knocks! Who's listening? "

I think that should appear in your records.

Then there is an editorial from the "Globe and Mail", dated April 24th, 1950, and one from the Halifax "Chronicle-Herald", of October 19th, 1953.

Then there is a letter from the man who designed the great Ford steam plant, giving his opinion of my work.

Here is a letter dated 1942, which the Manager of the Gas Works of the City of London wrote, where several thousand pieces of equipment were taken out. I was down there for quite awhile.

He tells how much money they made, and what they did with the tar, and what the coke was sold for.

If the government gets around to studying this

fuel business, and if we are going to continue importing American coal, let us take the smoke out of it before it is burned. It should all be brought to one central plant, and there the tar can be taken out of it. The gas will come in handy.

We are using our natural resources, and the credit is being established across the line.

I have some samples here which do not mean much. Let it stand in a warm room, and you will find that it flows quite freely.

MR. ELLIOTT: What would you suggest for storage for the gas and tar?

MR. CAUNT: For the gas?

MR. ELLIOTT: Yes.

MR. CAUNT: The economy of this sort of thing is something which I will have to study in order to answer a question of that kind.

MR. ELLIOTT: Can you put the gas back into the ground again? If you were using manufactured gas, and there was a gas well nearby, could you put it back into the ground again?

MR. CAUNT: The Union Gas Company is doing that very thing.

MR. ELLIOTT: If it is stored underground for a time, does it not become natural gas?

MR. CAUNT: Not necessarily.

MR. ELLIOTT: Am I right or wrong in saying it becomes natural gas when stored underground?

MR. CAUNT: No, it is still manufactured gas.

MR. ELLIOTT: Even if stored underground?

MR. CAUNT: Yes. Of course, it will mix with natural gas to a certain extent.

MR. ELLIOTT: It is not really a smoke-abatement problem.

THE CHAIRMAN: What business are you in now, Mr. Caunt?

MR. CAUNT: I work at the factory, as far as possible. I am seventy-two years of age. The department treats me alright; they send me a cheque every month.

I have been working on this thing right along.

Here is an article which appeared in the "Star" (indicating) --

MR. MURDOCH: I would like to mention the lignite deposit in northern Ontario.

The government had extensive examinations made of these lignite deposits, but it was a question of economics; it is a long ways off, and not easy accessible.

There is very little industry around the deposits, and it would cost as much to process it, as would be received from the finished product.

It was considered at that time that until industry would develop in the area around the deposits, it would cost more to process than the end product would be worth.

I want to mention that because it was mentioned in the brief. That has been thoroughly investigated.

MR. ELLIOTT: And it was found uneconomical?

MR. MURDOCH: If there were industries close to it, it would be alright, but at the present time, the distances are too great.

MR. CAUNT: I followed that very closely. That is how I came to be a little acquainted with the operations of the Select Committee.

I went up north there, and heard the Committee members and their experts discuss it at the Cochrane Courthouse, and at the City Hall in Kirkland Lake.

They brought in one expert from the States, and I questioned him just briefly in Kirkland Lake, to draw out the fact that there was a plant operating in Saskatchewan, and had been for some years, and I said to Doctor Sullivan, "Is that successful?", and he said, "Oh, yes, I have visited it".

I think if that can be done in Saskatchewan, it can be done in Northern Ontario.

I have another sample of that. They will not

melt together. It contains as much as 50 percent. impurities.

I would like to argue this with you at some later date.

THE CHAIRMAN: You can go and see Mr. Murdoch and spend an afternoon with him.

MR. ELLIOTT: Maybe you can make some money together. If you find you can make any money, please "tip" us off.

THE CHAIRMAN: Mr. Caunt, I think we have a pretty good idea of your plan, and we have your brief, which we will certainly go over, and I think we will be interested in it.

MR. CAUNT: I think you will find it very interesting.

THE CHAIRMAN: We thank you for visiting us, and showing the interest which you have.

MR. MORNINGSTAR: Has Mr. Caunt anything to say about the smoke problem here? Did he see the International Steel Company using it now in Hamilton,-- did he say that?

MR. CAUNT: No, the Dominion Coal and Coke Company in Nova Scotia.

If you go to Pittsburgh, you will see a plant owned by the Pittsburgh Steel and Coal Company. There

they are using smokeless coal. In Canada -- that is, in a portion of Canada -- the Canadian National Railway is using it.

MR. MORNINGSTAR: How would it compare with the price of coal?

MR. CAUNT: I have had correspondence with the Research Department of the Canadian National Railway, but there is not time to go into that at the present time.

THE CHAIRMAN: We have others here from whom we would like to hear.

---Mr. Caunt retired.

THE CHAIRMAN: Is Mr. John Adair here?

MR. BOYLE: He just slipped down to put another slug in the parking metre. He will be right up.

THE CHAIRMAN: Is there anybody else in the Chamber who would like to speak to the Committee?

I notice we have with us, the Research expert from the International Joint Commission. I do not think we will ask him to speak. We heard from him yesterday, that is, unless he has other information he wants to bring to the Committee.

MR. COLE: Mr. Chairman and gentlemen, I do not think I have anything to bother the Committee with at this time.

Mr. Elliott asked Mr. Boyle a question about

diesel buses. I think Mr. Boyle has a bulletin on "Diesel equipment and estimated exhausts" which I am sure you will find very interesting.

MR. LINSKY: I might comment on that further, Mr. Chairman and gentlemen.

In the material which the reporter has, is the report presented to our own County Council within the past six months on that subject, and which I have interpreted, let us say, in lay language.

Most of the material is in the Air Pollution Control Association's paper, and I think you will find an easily-read picture on diesel and gasoline exhausts.

THE CHAIRMAN: Thank you very much, Mr. Linsky.

MR. BOYLE: I had a talk with Mr. Adair before he went down to see the parking metre. He does want to speak to you for a few moments on behalf of the firemen of the Canadian National Railways, and he says he has a picture which has not been brought out, and he thinks you will be definitely interested in what he has to say.

THE CHAIRMAN: Fine. We will be very glad to wait for him.

While we are waiting for Mr. Adair, we have a letter from Mr. Gleeson. I asked if he was in the hall, as I thought we might be interested in hearing what he has to say.

However, he took time to write to our Secretary about the problem. Perhaps I should have read the letter, and perhaps we can help him. He has given some figures here.

I will ask the Secretary to read the letter.

DOCTOR EVIS (Secretary): The letter is as follows:

"I am writing with reference to the Leamington Town Garbage Dump.

Over a period of years, individuals and delegations of people living in the vicinity of Leamington's dump, have appealed to the Leamington Town Council, the Gosfield South Township Council, in which township the dump is located, and to the Provincial Minister of Health, to have abated the nuisance arising from the dump. To date, no progress, if one excepts promises, has been made.

Raw garbage, including decayed vegetables, chicken offal, etc. are dumped and left uncovered for weeks at a time at the height of the summer heat -- in fact, throughout the year. Periodically this pile is burned or partly covered with sand. Now a hole has been dug into which the garbage is dumped. When this plan was adopted in August of this year, the accumulation of garbage was left

uncovered for over three weeks.

My home is half a mile from the dump, in a southerly direction. The prevailing wind is from the southwest and yet each summer, I am forced to close all doors and windows in an unsuccessful attempt to keep the stench from the dump out of the house.

I am appealing to you as Secretary of the Air Pollution and Smoke Control Committee of the Ontario Legislature to learn if there are any steps that I can take or that you can take to remove this dump, that cannot help but be a danger to health.

The enclosed pictures may give you some idea of the conditions to which I refer.

I shall appreciate any help you can give me.

Thank you."

That is signed "P. J. Gleeson".

MR. GORDON: In connection with that letter, Mr. Chairman, would that not be properly the business of the County Health unit? I think steps could be taken by them.

We have a situation like that prevailing in many of our cities, but this is a dump, and it is covered, and there is no complaint.

THE CHAIRMAN: We will acknowledge the letter and say that we will see that it gets into the proper channels.

MR. MURDOCH: Actually, it is a municipal problem. There is no County Health unit in Essex County, but I believe in the near future there will be, and when a County Health unit is established, it will have authority to actually direct municipalities to do certain things, including the matter referred to in the letter from Mr. Gleeson.

However, we have not a Health Unit in the County today, but I think it is only a matter of time until this problem will be taken care of.

J O H N A D A I R,

Fireman, Canadian National Railway, representing the Local Union of Railroad Firemen, in the Windsor District, appearing before the Committee, but not being sworn, testifies as follows:

BY THE CHAIRMAN:

Q. Mr. Adair, we would be very glad to hear anything you care to say.

A. Mr. Chairman, and gentlemen of the Committee; I was not aware this meeting was going to be held this morning. I was under the impression it was to be this

evening, and hence I am not prepared with any document but I will say what we object to, and if you will "go along" with me, I will give you such information as I can.

I am an engineer on the Canadian National Railway, and the Union representative for approximately 40 or 50 firemen.

BY MR. ELLIOTT:

Q. How many Union firemen would there be in this area?

A. On the Canadian National Railway, 100 percent.

We are faced with the problem; I think, almost to a man, we realize air pollution is a very worth-while problem to consider and I do not think there is anybody who would not agree with that.

We are "in the middle" so to speak. I do not know how much longer I will be with the Canadian National Railway after I get through saying this, but actually they have not spent a dime.

BY MR. ELLIOTT:

Q. When they put on diesels, you will go with the diesels?

A. Yes.

Q. There is no lay-off?

A. No. They have not spent a time on air pollution.

Some years ago, somebody developed a device they called the "smoke consumer" which was attached by cutting through the side sheets; it was a kind of a bell affair, outside of the firebox, and it blew steam over the coal.

It was entirely effective, but it was of some help.

But they found it was costing quite a bit of money. Now we have about 15 cents' worth, which is placed over the turret valve in the firebox, and has no more effect on the firebox than "the man in the moon".

I will say that you cannot burn high-grade bituminous coal without making smoke.

I have been here for thirteen years, and men who have been here for many, many years longer than I, are still here, and I am sure that everybody will agree with me, who knows what this is about.

The management will tell you it is the men's fault. They say we are not co-operating. Just how much we can co-operate is questionable; we do the best we can.

Mr. Boyle knows it is impossible to burn that coal without smoke.

All they are prepared to do is discipline the men, so that they can show Mr. Boyle they are co-operating.

Actually, they are not co-operating at all. They are willing to do anything, as long as it does not cost anything. And yet they say the firemen are not co-operating, and are committing smoke violations.

There are five demerit marks for the first violation, ten for the second, and fifteen for the third, and when it gets up to sixty, you are all through. That is serious when you have no control over the thing. There are times when it is impossible to eliminate the smoke.

Do not get me wrong; I do not think anybody has been fired for burning coal with smoke.

This smoke problem is being enforced in Windsor in a business-like manner, and we are aware of it. We do not want to get these demerit marks.

BY MR. ELLIOTT:

Q. If a man gets fifteen marks, he should have got them.

A. Certainly. If a man is not co-operating, he should be disciplined.

If you put a fire in and are pulling a heavy "cut" of cars up the yard, and you cut the engine off, you have a great deal of smoke, one that Mr. Boyle says is three or four minutes of No. 4 smoke, according to the Ringelmann chart. The man has no more control of that than you have.

He may have the firebox door open, and that in itself is a violation. It is supposed to be kept shut.

However, we open them and do everything we can to try and co-operate.

I do not know whether this lies within the realm of this Committee or even if it is of any interest to you, but I am here to point out that we are trying to co-operate.

If the Committee is successful in having the Board pass a different ruling to No. 18, I hope when it is enforced, you will remember some of these things I have brought out.

They have not got one diesel in Windsor. The Wabash has two.

In Montreal, about which Mr. Boyle spoke, they will not even let a steam engine in.

BY MR. ELLIOTT:

Q. And they will not in New York, either.

A. I do not know about New York. In Montreal they cut off the steam engines at Turcot.

BY THE CHAIRMAN:

Q. Do you say there is no way of controlling these old coal-burners? We have been told by the experts there definitely is a way.

A. Not being a fireman yourself, you do not know whether that is right or not. I am only trying to give you the other side of their argument.

Certainly there is a way of eliminating a great deal of smoke, and we are trying to co-operate in Windsor, and I think everywhere else, because nobody likes to be criticized, and I thought, as a good citizen, I should say something and there are times and places where it is not within the realm of possibility to eliminate it.

Despite what you have heard -- I assume from the Bituminous Coal Association--it just cannot be done.

BY MR. ELLIOTT:

Q. You mean within the limits of the by-laws?

A. That is exactly it. You simply cannot comply.

Q. You think the by-law is a little too tough?

A. I do not think it is but the railroads are not taking any steps in the right direction; they are only "passing the buck". They do not care how much smoke they make, or how much inconvenience they cause the municipalities. All they do is to say, when somebody breaches it, "We are co-operating".

It is educational to a degree, but, however, you cannot prevent the emissions; you cannot accomplish the impossible.

BY DR. EVIS (Secretary):

Q. If they provided your locomotives with the proper equipment, it is possible then you could comply?

A. I would not say you could comply entirely. This old form of smoke consumer was more effective than what they are doing now. It costs about a dollar to put it on an engine now, and surely they can see that an engine is equipped with smoke-preventing equipment.

Q. The only answer is the Diesel?

A. Yes, that is true. All the American roads have found it more economical and they are not in a continual harangue with the municipalities.

Q. All these newfangled things, have not helped the smoke condition?

A. No, and it has cost them possibly only a few dollars.

BY THE CHAIRMAN:

Q. Mr. Adair, would you care to hazard a guess as to how long it will take the Canadian National Railway to completely dieselize?

A. It would only be a guess, but if it continues at the present rate, it will be over twenty years. I would be only guessing and I would not want to be quoted on that, but at the present rate of Dieselization, I think that would be about right.

I understand that Mr. Donald Gordon was in favour of Diesels, and scrapping most of the steam

engines, but he was criticized because there was going to be so many men unemployed, and a great number of men involved in the lay-offs, and somebody high up in the offices took steps to prevent it.

Our experience has been when you are laid off from one place, you are almost immediately assimilated into another.

Progress does not affect employment.

BY MR. ELLIOTT:

Q. It does not affect you at all?

A. No.

BY MR. MORNINGSTAR:

Q. The way I understand it, under the present set-up, it is almost impossible to control this smoke?

A. That is right.

Q. With this equipment, what you call the "smoke consumer", you could do a great deal better?

A. We have engines in service due to be condemned any day, and in Canada -- I do not care where -- if an engine is defective, if you can show how far that engine can perform the work, I will buy you the best hat, any time.

In spite of hell or high water, that engine will be in service until it completes its tour of duty.

BY MR. ELLIOTT:

Q. What is the problem?

A. As is quoted in the brief there, when you have a fire in there to maintain the steam pressure, and you immediately shut the throttle off, when you get a stop signal, and when the engine slips, that is another violation. We have no control over that. There is, in fact, a smoke emission, but that is from the flue, with an accumulation of soot, which is burned away.

Q. How long would you have smoke after a heavy haul, and a sudden stop?

A. Usually, by taking all the methods at our disposal, we can usually get it cut down in a couple of minutes.

Q. They only put a limit on it of three minutes in an hour?

A. Yes. This is not mentioned as criticism of Mr. Boyle, but the smoke inspectors do turn in violations of so many minutes of No. 4 smoke, and the best we are doing is with No. 2, but that still is not good enough.

We might eliminate No. 4 smoke in one minute and thirty seconds, and No. 3, possibly another three or four minutes, and so on.

We really have a problem. I do not know of anyone being discharged on account of it, but I thought the Committee, Mr. Boyle and his Department, and the

people in general should know that when the company says they are co-operating with you, they are not.

They are prepared to do everything but spend money.

BY THE CHAIRMAN:

Q. You cannot do anything about control without spending money. We have found that out.

A. That is right.

MR. MURDOCH: I think that emphasizes the necessity of our meeting with Ottawa. It would appear that the biggest problem in Windsor and Detroit still is through the lack of co-operation, indirectly from the people of Canada, through the Canadian National Steamship Lines on the lakes, and here the biggest offender is the Canadian National Railway. They appear to be the biggest offenders in the matter, as far as the railroads are concerned, and I think it is perfectly proper that we have this on our records which we can study, and use when we meet with Ottawa.

BY THE CHAIRMAN:

Q. I think the phrase "bad mannered industry", applies here.

MR. MURDOCH: Yes.

MR. MORNINGSTAR: I can sympathize with Mr. Adair. I have had experience firing engines, and

there must be found some way to control the smoke. If you open up your fire door it is not safe, in case the door blows out.

THE WITNESS: Then you can be criticized.

BY MR. MURDOCH:

Q. You could have an extra man, perhaps, standing beside the stack and signalling while you are operating the fire.

A. I know that you meant that facetiously, but it is not so funny as it sounds.

What we object to is being criticized and being disciplined when we are doing the best we can.

Well, I have 'shot my wad', and I thank you gentlemen for hearing me.

THE CHAIRMAN: We thank you very much for coming and representing your group, and giving this slant to the whole problem which, as yet, we have not had given to us.

THE WITNESS: I hope you take what I have said as it was intended. It was not meant to criticize the company which employs me, but, nevertheless, that is where the fault lies.

BY THE CHAIRMAN:

Q. You are speaking now as a citizen?

A. Yes.

BY DR. EVIS (Secretary):

Q. You said you did not expect the meeting to be held until this evening. If you want to prepare anything at your leisure, you can do so, and send it along.

A. It might be very detrimental to my future employment to send anything in a brief.

We have our Legion representative in Ottawa, Mr. McLean, and I would recommend that he do that. I will contact Mr. McLean and see if he can send a brief in, and have it placed in your hands.

BY MR. ELLIOTT:

Q. Have your top Union representatives present us with a brief?

A. I think that would be a good idea.

Q. The top members of your Union should have done that?

A. I think so.

BY MR. MORNINGSTAR:

Q. I believe that Mr. Boyle would like to co-operate with you in every way possible.

A. I have never found any lack of co-operation from him. If there is anything that can be done, I will contact Mr. McLean, and see what he will do.

THE CHAIRMAN: Thank you very much, Mr. Adair.

---Mr. Adair retires.

THE CHAIRMAN: Is there anybody else in the room who would like to speak? (No response).

If not, I think, gentlemen, we would like to extend our thanks to the Mayor of Windsor and the Council for the privilege of using their Chamber this morning, and on behalf of the Committee I would like to thank all those who were interested enough to come and appear before us, and who have been listening to what was said.

Your comments and suggestions will be most helpful to the Committee, and our future recommendations to the government.

We will adjourn now until 2:00 o'clock.

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----Whereupon at 12:05 o'clock, p.m., the further proceedings of this Committee adjourned to reconvene at Luncheon tendered by the City of Windsor, to the Committee.

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PROCEEDINGS AT THE LUNCHEON

Windsor, Ontario,
Friday, November 25th, 1955,
12:30 o'clock, p.m.

The further proceedings of this Committee
reconvened pursuant to adjournment.

PRESENT:

Mr. A. H. Cowling, Toastmaster,
 Presiding.

Messrs. Morningstar,
 Elliott,
 Murdoch,
 Gordon

Dr. Frederick Evis, Secretary.

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APPEARANCES:

Mr. H. Belyea, Industrial Hygienist,
 Department of Health, Ontario.

Mr. Samuel C. Boyle, Chief Smoke Inspector,
 Windsor.

Mr. B. Linsky, Chief, Air Pollution Bureau,
 Detroit, Michigan.

Mr. J. W. Garrett, Secretary, Smoke Abatement
 Advisory Board, Windsor.

Mr. Fred Closson, Air Pollution Control Officer
 of Wyandotte, Michigan.

Mr. R. J. Demairs, City Clerk, Windsor.

Mr. A. Hooper, Member, Advisory Board,
 Windsor.

Mr. J. D. Atchison, Representing the M.A.
Hanna Company, Windsor.

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---Luncheon was served.

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THE TOASTMASTER: Gentlemen, I would like to call upon Mr. Elliott, the member for Hamilton East, to express our thanks and appreciation for this fine luncheon today.

MR. ELLIOTT: Mr. Toastmaster and gentlemen; I feel quite humble coming into this beautiful area of Windsor and Detroit. Of course, they have not all the beauty in this area. We also have a beautiful city in Hamilton, and we have very fine and very hospitable people. However, from the very first day I came here, I have found the people across the river in Detroit, and the citizens on this side, in the Windsor area, just as hospitable. Everybody seemed to want to do just as much as they could in the Smoke Abatement Bureau in Detroit, and when we came across the river, and met our friend, "Sam" (Mr. Boyle) and his staff, they have continued to do likewise.

We find, of course, they have some problems upon which we hope to be able to help them out, and I am sure I voice the sentiment of the Committee when I

say that we have learned a great deal from them, and from our friends across the river. I am sure I can feel perfectly safe in saying that.

They have peculiar problems which may not be so apparent in other areas, and it is very interesting to come here and make a study of the situation, and to see it at first-hand, and to get their ideas on it, and I am sure the Committee will go back to the Legislature, and advise them of the co-operation and help we have received here.

We have not anywhere near completed our studies of this problem in this area, and we still have a great deal to learn.

We appreciate the friendly and co-operative spirit shown by the representative of the International Joint Commission, who went "all out" to give us all the help he could, and I received some further information since the meeting, where they have been quite willing to give me the information for which I asked, which they did not wish to give at the hearing, but were willing to give it to me, off the record.

All in all, this co-operative spirit is going to make for better feeling between our good neighbours to the north, and our friends in Windsor, in fact, all the citizens of our country, and we hope we will come

up with legislation very soon which will make for a more happy and prosperous country on both sides of the border.

In conclusion, may I say, on behalf of the Chairman and the Committee as a whole, that we wish you all health, happiness and prosperity, and that this Christmas and New Years may be the best you have ever had, and when you have the opportunity, come up to Hamilton, and you will get the surprise of your lives. You will see beauty as you have never seen it before. (Applause).

MR. BOYLE: Mr. Toastmaster and gentlemen, I would like at this time to ask our City Engineer, Mr. Ray Demairs, to reply to Mr. Elliott, of Hamilton.

MR. DEMAIRS: Mr. Toastmaster and gentlemen; I knew there was a catch in this someplace when I was invited to attend this luncheon, but I did not appreciate what it was until just now.

I know in the city of Hamilton they have some lovely things; I think they have a hole there and a hill. I think, with respect to the hole, they can do something about it, but with respect to the hill, I do not know what they have done to it since I saw it before.

Certainly in this area, we do not have anything of natural beauty, and what we have here probably has to

be changed from the way the Lord intended it to be in the first place.

However, what we lack in beauty, we make up for in hospitality, and I think the people in this district will offer you the kind of welcome you will be happy to receive, and sorry to leave.

On behalf of the city of Windsor, I would like to say we are very glad you came here, and we hope you have learned something of our problems. We hope you will advise us as to the method of doing something toward the solution of these problems, and I know you certainly will be giving some attention to them, when you get back to the Legislature.

Thank you very much. (Applause).

THE TOASTMASTER: That covers all the speeches, and this luncheon now stands adjourned.

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---Whereupon, at 1:55 o'clock p.m., the further proceedings of this Committee adjourned, to reconvene in the city of Sarnia, on Thursday, December 8th, 1955, at 9:30 o'clock a.m.

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APPENDIX "A"

Document entitled

V E G E T A T I O N S U R V E Y I N
D E T R O I T - L I N D S C R S T U D Y A R E A
1 9 5 4"

was admitted into the record, and is in words and figures, as follows, to wit.

VEGETATION SURVEY IN DETROIT-WINDSOR STUDY AREAGENERAL

1. The Detroit-Windsor Study Area constitutes a sprawling metropolitan area containing diversified industries, which are, on the whole rather widely scattered. There is no large highly concentrated industrial area, as in some older cities in the eastern states. The great expansion of manufacturing facilities which has occurred since World War II has not proportionately increased the density of industrial plants in the area, because so many have been placed at the periphery in locations until recently rural. Furthermore, the terrain is level; air movement is not impeded by hills, and strong inversions or persistent static pressure conditions are rare. Accumulation of air pollutants is, therefore, not generally encountered, nor to be expected.
2. The problem of determining the degree of atmospheric pollution becomes, on examination, a number of problems related to measuring the various effects of the atmospheric pollution and measuring the concentrations of different components of the atmospheric pollution.

The fall out of particles, especially the larger

particles, is commonly measured and subjected to some degree of analysis for identification. The resulting data represent both measurements of concentrations and measurements of the gross soiling effects of one category of atmospheric pollution. The trapping of suspended particles, especially the smaller ones, is carried out to measure the soiling effect or, after further analysis to any desired degree, their identities and concentrations. The sampling, measurement, and analysis for identification of gases is generally difficult because of their complex mixtures and low concentrations. The undesirable effects of gases and small particles, such as offensive odor, corrosion, vegetation damage, health damage, and visibility interference are generally not easy to measure. As new industrial processes start and increased concentrations of pollution-creating activities of all types occur, the difficulties of evaluating air pollution increase. There is, moreover, a natural tendency for laymen to ascribe injurious characteristics to pollutants with an offensive odor, until proved otherwise.

3. Damage to vegetation in industrial areas is frequently ascribed to air pollutants, particulate

and otherwise, often without good evidence. The literature on air pollution is not entirely satisfying because the effects in general are not expressible quantitatively, and prime attention has been given to specific situations such as may exist in the vicinity of a smelter or other source, where the injury is caused by one noxious gas and the plant species of economic value may be few. Current studies on the smog problem in the Los Angeles area may considerably widen the literature on the subject.

4. Different species of plants vary very widely in susceptibility to injury by atmospheric pollutants; some may develop damage symptoms under conditions that leave other species apparently unaffected. Varietal differences in susceptibility are also well established.
5. The most obvious and dramatic symptoms of injury to vegetation consist of dead and necrotic areas in the foliage, which may be marginal, at the leaf tip, or in intervenal tissues. Exposure to a relatively high concentration of a pollutant for a short period is more likely to cause such injury than prolonged exposure to a low concentration. The latter may indeed not result in any obvious

tissue damage. In deciduous shrubs and trees partial defoliation may occur following severe leaf injury. This, in turn, may cause premature developments of buds, or an abnormal habit of growth induced by injury to terminal shoots.

Disease or insect damage in some species, both herbaceous and woody, is not greatly dissimilar to presumptive pollution injury.

Considerable caution has to be exercised in the case of apparent injury to trees in street plantings, because such an environment may be far from optimal. Poor drainage, soil compaction, inadequate water supply, restricted root space, nutritional imbalance and soil contamination from street surfaces all may contribute to poor growth. Ornamentals and herbaceous species in foundation plantings or yards similarly may be adversely affected because of unfavorable soil conditions, and lack of ordinary cultural care.

6. Abnormalities and symptoms of injury are less equivocal in the earlier part of the growing season and in the more rapidly growing plants and plant parts. In the later part of the summer, particularly if rainfall is scant, or erratic, normal senescent changes in the vegetation, manifested

prematurely, may simulate some of the symptoms which might earlier in the season have been presumptively ascribed to air pollutants.

7. The symptoms of injury produced by different pollutants are not identical, nor are they sharply characteristic. Although it is possible in some cases to infer the nature of the pollutant from the species affected and the type of injury observed, this is not a reliable expedient. The injured tissues can be subjected to chemical analysis in an attempt to provide supplementary information, but much uncertainty exists as to what constitutes a normal range of content of some of the elements which may cause injury.

In general, therefore, it is not yet possible and may never be possible confidently to deduce from the appearance of affected vegetation, the nature and amount of exposure to the injurious pollutant. Under some circumstances a guess may be made, but this is subject to uncertainties caused by the age of the plant tissues, site conditions and the local weather conditions that may prevail during and shortly after the exposure.

VEGETATION SURVEY

1. Procedure

- a. Based on the experience of the previous season, it was decided to proceed by examining vegetation throughout the area, and particularly in the vicinity of possible sources of pollutants. The inspection team endeavored to acquaint itself with the normal appearance of species widely distributed in city yards and garden plots. In the study area small gardens are to be found in almost every street and in the immediate vicinity of almost all heavy industrial plants. In general, the same species are present, and in the case of annuals these may be assumed to have been planted at about the same time.
- b. The inspection group met weekly from May 5 to August 4, systematically seeking out areas of presumptive higher pollution, and visiting more than once such of these as appeared to contain injured species.
- c. Provisional plans also called for the placing of indicator plants in flats at three fixed air sampling stations, and their observation and removal at intervals for comparison with control plants of equal age, the intention being to

attempt to relate plant responses to known levels of sulfur dioxide at these stations. Satisfactory arrangements could not, however, be made for the proper care and protection of these indicator plants, and accordingly this phase of the plan was not implemented.

- d. Certain members of the inspection team took color photographs of injured vegetation in situ. In addition, some foliage samples were collected, dried, and mounted for reference of exhibit purposes.

2. Herbaceous species - observations

- a. In most of the area surveyed the appearance of herbaceous species, both annual and perennial, was normal, or as near normal as site conditions might be expected to allow. This observation was not limited to the cleaner areas. Almost all of the vegetation in the proximity of most industrial plants was apparently normal. There was no indication of a general repressive effect on plant growth or threshold level of foliar injury, except in two locations. Although particulate deposits were seen on many plants, the quantity generally was not such as to suggest that injury would result. Particular attention

was, however, directed toward rapidly growing annual or perennial species, leaves of most of which in the early summer had not had sufficient time to accumulate noticeable deposits.

- b. Some symptoms of injury to vegetation, presumptively related to air pollutants, were found in the immediate vicinity of probable industrial sources. At such locations, the apparent injury was limited to a few susceptible or responsive species, except in one instance which is reported in paragraph (e) below. Close examination of injured plants suggested that the injury did not arise from continued exposure to the deleterious agent, but from a specific incident or combination of circumstances probably of relatively short duration. This was deduced from the position of the injured leaf relative to other uninjured leaves developed either earlier or later, but has to be modified by recognition of the fact that leaves of different age are not equally sensitive or responsive.

- c. Unequivocal evidence of injury is found more frequently in May and early June than later in the season. Less recovery is made by species that essentially complete their vegetative growth

early in the summer than by those annuals and perennials having considerable summer growth. Injured spring bulbous plants, e.g. tulip, lily-of-the-valley, with relatively few leaves and no potential for leaf replacement changed little as the season progressed. By early August, normal senescent changes perhaps accelerated by periods of drought and high temperatures made it difficult to distinguish between suspected pollution damage and other effects in many herbaceous species.

- d. The plantain lily, *Hosta plantaginea*, appeared to be a good indicator plant in May and June. Widely grown in the study area, it exhibits leaf injury in the vicinity of some industrial plants. In the early stages the injury is manifest by the development of semitranslucent areas on the leaf tips and margins which later shrivel and become brown. Not all varieties are equally sensitive. The variegated variety has not been observed to be injured.

In one location near a large automobile plant with complex basic metal operations the clumps of plantain lily clearly indicated the direction from which the injurious material came. The

translucent areas extended back from the tip as much as one-third of the leaf length. This gave place to a speckled or mottled area followed by isolated spots on the remainder of the leaf suggesting that the pollutant was deposited in droplets, perhaps in a light rain.

- e. The inspection team visited several times an area in the city of Wyandotte contiguous to a chemical plant from which major chlorine emissions have occurred at intervals. Vegetation in this area was examined about 50 hours after one major exposure, and other cases from several days to three weeks after other reported emissions. Inasmuch as the areas affected by these known emissions overlapped, there was an unusual opportunity to determine and compare the effects of the initial exposure, of repeated exposures, and of recovery of both herbaceous and woody species. The team had in mind the fact that there is a history of recurrent emissions in this area which might have cumulative effects on perennial species. Although the responses of the vegetation to chlorine in the massive concentrations that must have been present in these emissions were of considerable interest, it cannot be said that the

results apply at all to the broad problem of industrial air pollution. These emissions can only be regarded as calamitous accidents, gravely damaging to vegetation and to property. They would be quite intolerable on any other basis.

- f. In the Wandotte area in which the chlorine concentration must have been highest, 50-100 yards from the source, virtually all vegetation was affected to some degree, some severely. Leaves of many plants were partially bleached, and some leaf tissues had become translucent; some leaves were seared marginally so that cupping occurred. Some woody shrubs, such as rose, privet, and Japanese quince, were caused to defoliate, partially or extensively, often without much sign of damage to the leaf lamina. Many garden vegetables, nowhere else seen with symptoms of injury, were affected. Interestingly enough, hosta, which is sensitive to sulfur dioxide, was not injured by chlorine.

Despite the high intensity of the injury to vegetation in the immediate vicinity of the chlorine source, the limits of the affected area downwind were but five to six short blocks (1400-1500 feet). At this distance distribution of injured plants

was erratic, perhaps due to air eddies around the dwellings.

g. Several weeks after a severe emission in Wyandotte the same area was resurveyed. A surprising amount of recovery of many herbaceous species and some of the shrubs was found. Badly injured leaves had mostly been shed, but new buds had opened. Those species which make most of their growth in the spring were less likely to show pronounced recovery since the injury apparently developed toward the end of their active period of growth.

h. The detailed observations made at the many locations surveyed are not appended to this report. In general, they were closely similar to those included in the 1953 report.

3. Trees and woody species - observations

- a. The study of woody species presented many difficulties as to cause and effect, and conclusions had to be developed by comparing the foliage and general appearance of widely planted species in the vicinity of industrial plants, and in non-polluted areas.
- b. In all areas trees were found which appeared normal, but even in non-polluted areas some trees

and shrubs were observed to be unhealthy or abnormal in one or more respects. The presumptive cause of such was differences in site and in case.

- c. In the immediate vicinity of some industrial plants, and particularly chemical plants, evidence of current and/or past years injury was evident in the woody species, but this in general applied to only some of the species present in the area, and moreover in some such locations no abnormalities not ascribable to site were apparent.
- d. Those woody plants that received good cultural care, or were vigorous and healthy, seemed to be more resistant to injury by air pollutants, and made better recovery from damage arising from major or repeated emissions.
- e. Foliage was affected by deposition of particulate material as well as by gases. Particulate material washed to leaf margins by dew or light rain often resulted in marginal injury. Spot burning was seen in one instance due apparently to droplets containing chemicals in solution. Evidence of chemical injury included tip burn, spot burn, intervenal necrosis, cupping, curling,

bronzing or discoloration, and stunting.

- f. In the Wyandotte area in which repeated emissions of chlorine have occurred, severe foliar injury was found on some woody species. Some, such as ailanthus, quince, box elder, Chinese elm, and privet were extensively defoliated in a few days without indication of burning of the foliage.

The leaves of other woody species such as willow, peach, apple, linden, etc., exhibited severe leaf curl, marginal and/or extensive burn, and reddening or browning of the tissues.

On the other hand, the foliage of some equally exposed species, such as American elm, sugar maple, silver maple, horse chestnut, etc., was not found to have any symptoms of injury.

Everally injured or defoliated woody species produced new foliage in a few weeks after chlorine exposure. The new terminal growth, however, was sparse, though the individual leaves or leaflets appeared normal.

CONCLUSIONS

1. Most of the vegetation in the study area whether in the vicinity of industrial plants or in areas well removed from industrial sources of air pollutants appeared normal in the late spring and early summer.

By August, however, it became difficult to distinguish between those senescent changes that occur in a dry period and possible pollution injury.

2. Distinct and positive symptoms of injury to vegetation were found only in the immediate vicinity of certain industrial plants that would be presumptive sources of the types of air pollutants damaging to vegetation. Even in these locations, however, the injury was apparent only on a few species, and most herbaceous and woody plants did not appear to be adversely affected by this component of their environment. In close proximity to most industrial plants no evidence of current injury could be found.
3. Where injury was found, the symptoms, with rare exceptions, were such as to suggest that the damage could be related to specific incidents or emissions of relatively short duration. In one area the injurious material had clearly been deposited in the form of droplets. These observations lead to the conclusion that the air pollution problem in the study area, as far as vegetation is concerned, is not one of a more or less constant background level of air pollution causing generalized growth repression. On the other hand, in the vicinity of some industrial sources, the problem is one of

sharply fluctuating levels, the higher of which, accentuated by sluggish air movement or temperature inversions, may cause injury in the vicinity.

RESPONSIBILITY

1. The survey team consisted of representatives of the following cooperating organizations:

City of Detroit, Department of Parks and Recreation

City of Detroit, Dept. of Bldg. and Safety Eng.,
Bureau of Smoke Inspection and Abatement

City of Detroit, Bureau of Industrial Hygiene

City of Windsor, Air Pollution Control Department

City of Wyandotte, Dept. of Engineering, Air
Pollution Control Office

Wayne County Road Commission, Division of Parks
and Forestry

Canada, Dept. of Agriculture, Science Service
Laboratory, Harrow, Ontario.

University of Michigan, Dept. of Botany

Michigan State University, Co-operative Extension
Service, Dept. of Land and Water Conservation,
Dept. of Botany.

International Joint Commission, Technical Advisory
Board, Canadian Section.

Michigan Department of Health, Division of
Occupational Health.

2. The report was prepared by W. B. Lowe, Mr. Loncar, A. G. Norman and E. Steiner and represents the conclusions of the following:

<u>Name</u>	<u>Title and Organization</u>	<u>Address</u>
Frank Vaydik, Chairman	Asst. Supt. of Forestry and Landscaping, City of Detroit.	1214 Griswold St. Griswold Building Detroit 26, Michigan
Thomas Barton	Landscape Architect, Wayne County Road Commission	3800 Cadillac Tower Detroit 26, Mich.
S. C. Boyle	Chief Inspector Air Pollution Control Dept.	City Hall Annex, Windsor, Ontario
G. A. Cave	Officer in Charge, Windsor Lab., Interna- tional Joint Commission, Canadian Section	108 MacDougall St. Windsor, Ontario
Fred W. Classon	Air Pollution Control Officer, City of Wyandotte	994 Biddle Wyandotte, Mich.
L. W. Koch	Admin. Officer in Charge, Science Service Laboratory	Harrow, Ontario
Benjamin Linsky	Chief Smoke Inspector City of Detroit	400 Woodward
Michael Loncar	Assoc. Forester, City of Detroit	1214 Griswold St. Griswold Bldg. Detroit 26, Mich.
Wm. Love	Extension Specialist in Municipal Forestry and Parks, Michigan State University	East Lansing, Mich.
A. G. Norman	Professor, University of Michigan	Dept. of Botany Ann Arbor, Michigan

<u>Name</u>	<u>Title and Organization</u>	<u>Address</u>
Leslie Reid	Engineering Assistant Dept. of Engineering and Building	994 Biddle Wyandotte, Michigan
Nick Smith	Asst. Wayne County Agricultural Agent, Co-operative Extension Service	3930 Newberry St. P.O. Box 552 Wayne, Michigan
E. Steiner	Asst. Professor University of Michigan	Dept. of Botany Ann Arbor, Michigan
Austin Tomlinson	Assoc. Mechanical Engineer, Smoke Abate- ment Bureau City of Detroit	400 Woodward Detroit 26, Michigan

APPENDIX #1

Species commonly found in the study area that have been observed to be indicator plants:

Plantain lily - tip burn and marginal necrosis (not all varieties).

Iris - tip burn.

Lily-of-the-valley - tip burn and marginal injury.

Tulips - extensive tip burn (not all varieties).

Tradescantia - leaf tip injury.

Viola - marginal injury.

Grape hyacinth - dieback from leaf tip.

Onion - dieback from leaf tip.

Species observed to be particularly injured by chlorine:

1. Herbaceous plants.

Peony	Gladiolus	Carrot
Sunflower	Hollyhock	Cabbage
Canna	Lettuce	Beet
Rhubarb	Radish	Clover
Iris	Perennial pea	

2. Woody plants

Privet	Chinese elm	Rose
Box elder	Catalpa	
Ailanthus	Japanese quince	

APPENDIX #2

The following notes will elaborate on the observations of woody vegetation:

May 5, 1954 - The survey started in the city of Wyandotte in the vicinity of Biddle and Marshall Streets. This area is adjacent to a large chemical plant that had a breakdown resulting in an emission of chlorine gas on April 20, 1954.

The greatest amount of damage was localized in the vicinity of Marshall and Biddle. There was little evidence of damage a thousand feet from the source of the emission. One other area was surveyed approximately four blocks from the Marshall-Biddle intersection, and there was no apparent damage to vegetation in this area.

The following woody plants were found affected in the immediate vicinity of Marshall and Biddle:

1. Willow - marginal burn on young foliage.
2. Peach - marginal burn, chlorosis.
3. Rambler rose - chlorotic.
4. Apple - chlorosis, leaf curl severe, slight marginal burn.

5. Linden - severe leaf curl and stunting.

6. Spirea - chlorosis and leaf burn.

May 12, 1954 - Oakwood and South Fort Triangle in
vicinity of refineries.

1. Trees normal.

West Patton Park - vicinity of large automobile plant
with complex basic metal operations.

1. Mock orange - heavy particulate deposit on
leaves, slight tip and marginal injury.

2. Elm and hackberry normal except for deposits
on foliage.

Wyoming and Dix - vicinity of same automobile plant
as above. Heavy particulate deposits on foliage.

1. Apple - heavy particulate deposits on foliage,
bronzing of foliage, marginal injury and leaf
curl.

2. Cottonwood - apparently no injury except possible
frost injury to tender leaves on lower part of
tree.

Woodmere Cemetery - vicinity of same automobile plant
as above.

1. Trees - normal, except Schwedler Norway maples
appear to have suffered severe frost injury to
foliage.

May 19, 1954 - Jefferson - Dearborn Streets - vicinity
of large chemical, mineral, metallurgical
industrial area

1. Honeysuckle - light spot burn and chlorosis
2. Plum - marginal injury to leaves.
3. Cherry, mulberry, black locust, mock orange,
pear, privet, cottonwood, London plane, horse
chestnut - normal.

Jefferson-Junction Avenues - vicinity of acid plant.
Sulfuric acid odor in air. Damage in area
quite light.

1. Box elder - slight chlorosis.
2. Elm - thin foliage.

Carbon and Forman Streets - vicinity of fertilizer
plant. Heavy particulate deposits on all
species in the area.

1. Lilace - older foliage damaged, about one-third
defoliated.
2. Ribes - slight foliage injury.
3. Pear and apple - slight tip burn.
4. Linden - slight curling of leaves.
5. Privet, yew, willow, ailanthus, mulberry - normal
except for deposits on foliage.

May 26, 1954 - Hubbell and Joy Road - vicinity of chrome
plating plant.

1. Mock orange - leaf curling and slight marginal

burn.

2. Syringa - leaf curling and slight marginal burn.

(Odor of naphtha in area - injury very mild.)

Ferndale - vicinity of large organic chemical plant.

1. Elms - west side of plant. Dieback severe in some individual trees, slight marginal injury on some trees, others appear normal.

2. East side of plant for two to three blocks.

Severe dieback or death of box elder, red and black oaks, black gum, silver maple apparently caused by repeated defoliation in past years.

Practically all white oaks in immediate vicinity dead.

3. No indication of current injury to foliage.

4. A member of the survey team observed severe defoliation of trees in this area in July of 1949. Since that date air pollution control equipment has been installed and the situation has improved.

June 2, 1954 - Southwest Ontario

Chappell and Peter Street, Windsor, Ontario

1. Trees normal.

St. Johns Cemetery

1. Elms - severe tip and marginal curl, slight chlorosis of the leaf margins, stunting of leaves, perhaps due to mosaic disease but possibly due to air pollutants or chemical herbicides.

2. Cottonwood, white ash, and various shrubs normal.
Windsor Salt Plant area - damage to foliage and dieback
of trees in this area. This condition has been
observed for the past several years.

LaSalle - trees and shrubs normal.

Essex Golf Course - trees and shrubs normal.

Brine Well Pumping Station - no damage to woody vegetation.

Soda Ash Chemical Plant area:

1. Heavy deposits of particulate material on foliage.
2. Red Osier dogwood - leaf curl and slight marginal burn.
3. A member of the survey team has observed damage to trees and crops in the last several years.

June 9, 1954 - Wyandotte - vicinity of large chemical plant. There was a serious accidental emission of chlorine gas fifty hours previous to the survey and minor emissions are known to have occurred the same day.

Biddle and Marshall - not in the area covered by the most recent emissions.

1. Grape - normal.
2. Apple - marginal burn and killing of intravascular cells with reddening of under surface of leaves.
3. Catalpa - slight chlorosis.
4. Forsythia and mock orange - tip burns.

Areas involved in chlorine emission.

1. White ash - bark bleached yellowish color. Slight foliage burn.
2. Catalpa - considerable foliage injury and chlorosis
3. Pear - slight to moderate foliage injury.
4. Apple, spirea - moderate to severe foliage injury.
5. Privet - defoliating.
6. Chinese elm, ailanthus - practically defoliated.
7. Box elder - chlorosis and some defoliation.
8. Japanese quince - severe defoliation and foliage burn.
9. Plum, cherry - moderate to severe foliage burn.
10. American elm, hydrangea, sugar maple, silver maple, horse chestnut - normal foliage.
11. Linden - slight chlorosis.

June 16, 1954 - vicinity of auto obile plant with complex basic metal operations.

West Patton Park - trees normal.

Wyoming near Vernor - trees normal.

Woodmere Cemetery.

1. Schwedler Norway maple - spotting on foliage probably due to droplets of moisture containing chemicals in solution.
2. All other species of woody vegetation normal.

June 23, 1954

Belle Isle, Detroit - woody vegetation normal.

Essex-Conner - woody vegetation normal.

Dickerson - barren area - woody vegetation normal.

July 7, 1954

Hard Chrome Plating Plant -vicinity W. Chicago and
Wyoming - foliage normal in vicinity.

Faint Company - vicinity Cakman Blvd. and Grant
River Avenue:

1. Elm trees along curb suffering dieback and
leaf scorch due to root injury from herbicide
containing borax used to kill vegetation in
adjacent storage yard.

Hard Chrome Plant - vicinity of Cloverdale and
Burlingame:

1. Maples, ailanthus, apple, honeysuckle,
viburnum and dogwood normal.

Hard Chrome Plant - vicinity of St. Johns and Lyndon:

1. Box elder and elm - slight marginal leaf burn.

Hard Chrome Plant - Alpine Street

1. Foliage normal.

July 21, 1954. Wyandotte - vicinity of chemical plant
that had serious emission of chlorine on or about
June 7 that caused severe foliate damage to many
species.

1. Privet - previously defoliated has produced new foliage and appears normal.
2. Chinese elm - new shoots and leaves sparse, many dead twigs.
3. Ailanthus - meager new shoots and foliage, no new foliage on old growth previously defoliated.
4. Mulberry - older foliage damaged, new foliage normal.
5. Apple - older foliage damaged, new foliage normal.
6. Sugar maple, basswood, American elm, silver maple, horse chestnut, catalpa - foliage normal.
7. Property owner at 616 Forest reports that he lost a crop of cherries by dropping following June 7 emission and there is a heavy drop of plums.
8. There is no new evidence of foliage injury in the area.

August 4, 1954 - Southwest Ontario, Canada, area was surveyed and no apparent air pollution injury to woody vegetation was observed at this time.

NOTE: No woody species in the study area could confidently be selected as indicator plants.

APPENDIX "B"

PROPOSED REVISION TO GENERAL ORDER NO. 18
 (ORDER NO. 5678)
 ISSUED BY THE BOARD OF RAILROAD COMMISSIONERS FOR CANADA
 DATE NOVEMBER, 1908

At its meeting held on May 13, 1955, the Air Pollution Advisory Board gave further consideration to the proposed revisions to General Order No. 18 (Order No. 5678), of the Board of Transport Commissioners for Canada and requested the Commissioner of Property and the City Solicitor to designate representatives of their respective Departments to confer with representatives of the railways to propose an order that would be mutually satisfactory to the Department of Property and the Railways.

A meeting was arranged for and held in the office of Mr. F.A.A. Campbell, J.C. of the City Legal Department on June 27th, at 2:00 p.m., at which were present:-

Messrs.

F.A.A. Campbell, J.C., City Legal Department.

O. R. Barefoot, Supt. of Motive Power, C.P.R.
 Eastern Region.

G. R. Forsyth, Legal Dept., C.P.R.

L. S. McGregor, General Superintendent Motive Power
 and Equipment, C.N.R. Eastern Region

M. Duncan, Legal Department, C.N.R.

H. H. Rogers, Deputy Commissioner of Property.

J.I.R. Neilson, Director of Smoke Abatement Bureau
 Department of Property.

The various items of the Proposed Revision were discussed as follows:-

Paragraph No. 1 was generally acceptable as follows:-

1. Railways operating in such municipalities or areas within the Province of Ontario that have passed or may hereafter pass by-laws for the control, regulation or prohibition of smoke or other air pollutants or by-laws to the like effect be subject to the following provisions. They shall not apply to a municipality or area which does not provide an officer or official to administer the by-law.

Paragraph No. 2 was not acceptable to railway representatives with respect to that part of it which reads:-

"shall be subject to such By-law or by-laws as have been or may be enacted by any municipality or area empowered to enact such legislation".

This paragraph referred to property other than locomotives on railway property and does not refer to railway property within the City which is normally subjected to the ruling of the City Smoke By-law.

With approval of this Board, Paragraph 2, could be re-written to read:-

2. "The discharge or emission to the atmosphere, of smoke, from any fuel burning equipment, internal combustion engine, vehicle, outside open fire or premises

excepting steam or diesel locomotives, which is equal to or greater than No. 3 Ringelmann Smoke Chart, at the point of emission in excess of a period or periods aggregating six (6) minutes in any one hour be prohibited."

3. It was the contention of all the railway representatives that the limitation of 30 seconds in any 4 minute period was not feasible and suggested adoption of the Montreal Order limitation (Order No. 70714). As Paragraph (4) of that Order, however, specifies 1-1/2 minutes of smoke in excess of No. 2 Density in any ten minutes, such adoption would be a more liberal allowance than that in the existing Order No. 18 (Order No. 5678), which allows one minute in ten of any one hour which I maintained should not be exceeded.

With this Board's approval, this Paragraph may be rewritten to read:-

3. "Locomotives in service or ready for service shall not emit smoke of a density equal to or greater than No. 3, of the Ringelmann Smoke Chart except for a period of 1 minute in any 10 minute period."

4. Both railway representatives claimed the time limit of 3 minutes in a 15 minute period of No. 3 Ringelmann Density or over to be impracticable when cleaning or building new fires.

The C.N.R. Representatives stated the layout of their Roadhouse with regard to the construction of the common duct and single chimney created a condition whereby no individual locomotive could be traced with regard to its participation in smoke emission and contended it was better to have a 1 smoke go into a single high chimney rather than to be emitted from a collection of short individual stacks. C.P.R. representatives recommended allowance be 6 minutes of smoke of density not exceeding No. 2 Ringelmann Density in any one hour.

With Beard's approval, Paragraph No. 4, may be re-written as follows:-

4. "Locomotives in which a firebox is being cleaned or a new fire built shall not emit smoke of a density the shade and appearance of which is equal to or greater than No. 2 Ringelmann Smoke Chart except for a period or periods aggregating 6 minutes in any one hour."

(This is in conformity with C.P.R. Proposal.)

5. As explained in connection with Paragraph No. 2, C.N.R. Representatives took exception to wording co-relating railway property with a Municipal By-law and as this applies to the latter part of Paragraph No. 5, suggest re-wording it as follows:-

5. "Engine houses in which steam locomotives are repaired, serviced, cleaned and/or houses, having individual stacks, shall conform to Paragraph No. 4 above. Engine houses having a common discharge stack for two or more steam locomotives shall conform to Paragraph No. 4 and Paragraph No. 6."
6. "Where it is found necessary to comply with Paragraph No. 5 above, the engine house shall be equipped or provided with a means of observing each individual stack or a smoke recording system on each stack moreover overfire steam or air jets shall be coupled to the roundhouse steam line or portable air jets operated manually by the fire builder or low volatile coal or oil, gas or electric igniters or a "direct steaming" or fuelless system or a collector and gas washing system or any combination of the foregoing methods or suitable alternative method or methods shall be provided to prevent noxious products of combustion from being expelled into the atmosphere."
7. Representatives of both railways stated the latter part of this Paragraph was not practical due to difficulty in taking measurements of exhaust gases. This Paragraph may be re-worded to read:-
7. "Diesel engines shall receive frequent periodic inspections and be maintained in first-class working

condition and shall conform to limitations of smoke emissions as for steam locomotives as set out in Paragraph No. 3. The discharge of fumes, odours and gases from diesel locomotives to an extent which is detrimental to the property of any other person or which is a nuisance to any person not being therein or thereupon engaged, be prohibited.

8. "Failure of employees to comply with provision of this Order shall be deemed a violation of this Order, and shall be subject to the penalties as hereinafter provided."

9. The matter of the liability for accidents to other than railway employees, engaged on the work of Smoke Abatement from locomotives, while such persons are on railway property was discussed and in consequence of this discussion this paragraph has been re-written with approval of City Legal Representatives to read as follows:-

9. "Any or all appointed officials of a smoke abatement or like department of a municipality shall upon proper authorization be permitted entry to any railroad property at reasonable hours or times for the purpose of making observations or investigations in company with responsible railway officials, necessary to enforce the provisions of this Order.

"In the event of an employee of a municipality

meeting with an accident when on the premises of a railway company, he shall be precluded from suing the company for damages and shall be considered as an employee as engaged in the business of his employer and shall come within the terms of the Workmen's Compensation Act, the compensation to which he may be entitled shall be charged to the municipality of which he is an employee."

10. C.P.R. Representatives had no objection to this paragraph, inasmuch as they stated any necessary information had always been supplied on request.

C. N. R. Representatives thought this paragraph unnecessary and saw no need for its inclusion in the Board Order.

This paragraph could be re-written as follows:-

10. "Railroads shall make available to officials of local municipalities or areas such information that they may request pertaining to locomotive operating in the municipality or area together with any data which may be considered necessary to such municipal officials."

11. C. P. R. Officials had no objection to this paragraph, C. N. R. Officials stated furnishing of reports be left to co-operative action.

I suggest this remain as is but to extend period of furnishing report to four months.

11. "Railways shall prepare reports at periods not longer than (4) months apart indicating progress on smoke elimination, changes in equipment or operations pertaining to the smoke problem and action taken against violators or offenders.

A copy of each report shall be provided to each municipality or area for which the report covers."

12. "Every company or person offending against the foregoing regulations or any of them shall be guilty of an offence, and in the case of a company shall be subject to a maximum penalty of (\$100.), and in the case of any other person a penalty of \$25.00), for every such offence."

13. "Judgment of offences or violations shall take place in and by municipalities or areas in which the violations have occurred in any such courts as may be in existence in the area."

Representatives of both railways requested re-inclusion of Paragraph No. 5, in General Order No. 18, (Order No. 5678), which is concerned with the ascent of Scarborough grade and grades at Hamilton."

In that paragraph an allowance of 10 minutes of dense smoke or Ringelmann No. 3 in any one hour is allowed.

As, however, General Order No. 18 (Order No. 5678), was formulated in 1908, and as the speed and type of locomotives has altered considerably since that time, it is felt this allowance is too liberal. Not only so, but in the event of Scarborough being included within the Municipality of Metropolitan Toronto, such a condition would mean that any locomotive could make dense smoke for a period of 10 continuous minutes into Scarborough which could give rise to many complaints from residents in that location.

It is considered that the maximum allowance be set at 1 minute of dense smoke in any 10 minutes, in the event the Board should see fit to re-include this paragraph, in which event it could be inserted as the last part of paragraph No. 3.

APPENDIX "C"

19/4/55

AIR POLLUTION CONTROL DEPARTMENT
CITY OF WINDSOR

The following article is from Report No. 3,
Conference on Incineration, Rubbish Disposal and Air
Pollution as published by the Air Pollution Foundation
Los Angeles, California.

SESSION II

Incineration: Advantages and Disadvantages

SUMMARY

SURVEY OF DOMESTIC GAS-FIRED INCINERATORS

by
George B. Uicker
Professor and Vice-Chairman
Mechanical Engineering Department
University of Detroit
DETROIT, MICHIGAN

In 1953, the City Council of a certain city
decided to eliminate garbage collection and most of
the rubbish collection and at the same time dispose
of these wastes by use of gas-fired domestic incinera-
tors to be installed in each home. The author
directed the tests to determine the suitability of
domestic gas-fired incinerators for the purpose
intended. In all, 14 representative incinerators
were tested.

The general purpose of the investigation was

expanded to evaluate operational safety, relative garbage burning capacity, efficiency of garbage burning, and failure of components due to effects of operation.

The test booth of the American Gas Association was adopted with minor modifications. A continuous record was made of carbon dioxide concentration to determine completeness of combustion. Smoke samples were taken to determine maximum smoke density. Arrangements were made to permit the measurement of temperature in various parts of the unit.

Standard test loads developed by the A.G.A. were used. One test was made with shredded newspaper, the other with simulated garbage. The firing procedures established by the A.G.A. were followed for the shredded newspaper, but modified for the simulated garbage load by reducing the load to one-half of rated capacity.

Gas-fired incinerators fall into two general classifications:

- (1) "Dehydrating" (constant low Btu input)
- (2) "Rapid Combustion" (limited time, high Btu input)

The dehydrating type operates on the principle that by applying a constant low Btu input the wet charge can be gradually dehydrated or dried and then ignited, from which point ^{it} will proceed to burn to completion. This type of incinerator utilizes a

a burner input of between 1500 and 3500 Btu per hour.

The rapid-combustion type operates on the principle that a high Btu input (9000 to 25,000 Btu per hour) will allow dehydration and combustion to take place simultaneously, since the burning dry mass should help to dehydrate the remaining wet mass.

Throughout the testing, odours were emitted into the stack. Although the draft was usually sufficient to prevent odors from entering the test room, the odors were still present in the flue gases and were emitted from the stack. In the case of a congested living area, where chimneys are close together and low, the author believes it would be almost certain that the concentration of domestic incineration planned would result in an air pollution problem of considerable magnitude.

"Even if the incinerator is designed and constructed for completely odorless combustion, the operator would be the housewife, who, in most cases, would not be skilled in the firing technique required and she certainly would not invest the time and trouble necessary to follow firing methods required for complete combustion. In this the author does not intend to belittle the housewife, since he believes that the average husband could not do any better."

Observations of the incinerators during the course of the tests indicate that none of the units were satisfactory and some were definitely hazardous.

"The author believes that it will not be feasible to design a domestic incinerator for use in metropolitan areas for the disposal of garbage. It may be possible to devise a combination system of disposal, involving the domestic incinerator as a burner of a limited type of rubbish and a garbage grinder for disposal of garbage with municipal collection for other types of combustible and non-combustible refuse. Since this will still involve collection, with need for maintaining a collection and disposal group with all its problems, the landfill method is a possible logical solution in spite of its difficulties."

The use of domestic incineration will not benefit the home owner financially. The original installation costs are between \$100 and \$200 and operating costs about \$2.00 per month.

The author recommends that the use of gas-fired domestic incinerators should not be discouraged during the period when municipal methods are being studied and developed, even though the private financing of these units may postpone the need for additional taxes to conduct the municipal operation.

APPENDIX "D"

B Y - L A W N U M B E R 799

A BY-LAW RESPECTING THE ABATEMENT OF SMOKE
AND OTHER ATMOSPHERIC POLLUTION

Passed the 6th day of December, 1949.

The Municipal Council of The Corporation of the City of
Windsor enacts as follows -

I

SHORT TITLE.

This by-law may be cited as the "Smoke Abatement
By-law." II DEFINITIONS

In this by-law and in any regulations adopted pursuant to the provisions of this by-law --

1. "Dust" means gas-borne and air-borne particles larger than 10 microns in mean diameter.
2. "Dust-separating equipment" means an apparatus or device for separating solid matter from the gas medium in which it is carried.
3. "Fly-ash" means fine solid particles, consisting mostly of incombustible material, that are entrained in and carried by the gaseous products of combustion.

4. "Fuel-burning equipment" means a furnace, incinerator, refuse-burning equipment, boiler, chimney, flue, stack or any other apparatus, device, mechanism or structure used in or in connection with the process of burning fuel or other combustible material, but does not include an internal combustion engine or a vehicle.
5. "Fumes" means gaseous products of combustion of such character as to create an unclean, destructive, offensive, or unhealthful condition.
6. "Inspector" means the official of the City of Windsor for the time being in charge of the Department of Smoke Abatement, or the person performing the duties of his office.
7. "Internal combustion engine" means an engine or turbine in which combustion of a gaseous, liquid or pulverized solid fuel takes place within one or more cylinders or combustion chambers.
8. "Person" includes a partnership, association, syndicate, trust, corporation, department, bureau, agency or any other entity recognized by law as the subject of rights and duties.
9. "Regulations" means the regulations from time to time passed by the Smoke Abatement Advisory Board pursuant to this by-law.

10. "Ringelmann Smoke Chart" means the Ringelmann Smoke Chart published by the United States Bureau of Mines when the same is used in accordance with the instructions published by the said Bureau.
11. "Smoke" means small gas-borne particles consisting essentially of carbonaceous material in sufficient number to be observable.
12. "Soot" means agglomerated particles consisting essentially of carbonaceous material.
13. "Stack" or "Chimney" include a flue, conduit or other opening arranged for emitting gases into the open air.
14. "Vehicle" includes a roller, derrick, crane, pile driver, trencher, portable hoisting engine, tar kettle or other apparatus which is not ordinarily permanently installed in one location but is used at various places over a wide area.

III

DISCHARGE OF SMOKE, DUST, FLY-ASH, ETC.

1. The discharge or emission to the atmosphere within the limits of the City of Windsor of smoke, dust, fly-ash, soot, fumes or other solid or gaseous product of combustion, the shade or appearance of which is equal to or denser than Number 2 Ringelmann Smoke Chart is hereby prohibited except for a period or periods aggregating not

more than 4 minutes in any one half hour, and except as hereinafter provided.

2. Smoke, the shade or appearance of which is equal to but not denser than Number 3 Ringelmann Smoke Chart, may be discharged only when a new fire is being built, and then only for a period or periods aggregating not more than 3 minutes in any quarter hour.

3. The discharge or emission of smoke beyond the limits set forth in sub-sections (1) and (2) of this Section shall not be deemed a violation of this By-law in the event of a break-down in the fuel-burning equipment, provided such excessive discharge or emission is continued only for such period as may in the opinion of the Inspector be required for repairs.

4. No person shall, in the City of Windsor, cause, suffer or allow to be discharged or emitted from any fuel-burning equipment, internal combustion engine, vehicle, outside open fire, or premises, any smoke, dust, fly-ash, soot or fumes or other solid or gaseous product of combustion in violation of subsections (1), (2) and (3) of this Section.

IV

DUST AND FLY-ASH

1. No person shall, in the City of Windsor, cause, suffer or allow to be discharged or emitted from any fuel-

burning or dust-separating equipment, any dust, soot or fly-ash exceeding 0.85 pounds per 1,000 pounds of gases, adjusted to 12 per cent. CO₂, except that dust, soot or fly-ash not exceeding 15 per cent. of the total dust, soot or fly-ash entering any dust-separating equipment may be discharged or emitted to the atmosphere; and for the purposes of this paragraph the amount of dust, soot or fly-ash in the gases shall be determined according to the Test Code for Dust-Separating Apparatus of the American Society of Mechanical Engineers, as revised and amended from time to time.

2. All fuel-burning equipment in which pulverized fuel is or is intended or designed to be burned, spreader stokers or similar types of suspension-burning equipment, installed after the passing of this by-law, shall be provided with dust-separating equipment approved by the Inspector sufficient to prevent the discharge or emission of dust, soot or fly-ash in excess of the limits set forth in subsection (1) of this section.

3. Provided, however, that the provisions of subsection (1) of this section shall not apply to any fuel-burning or dust-separating equipment installed prior to the date of the passage of this by-law until after the expiration of three (3) years from such date.

V

SMOKE INDICATORS

1. Each stack or chimney of every plant that burns or is intended or designed to burn solid or liquid fuel and has more than 500 square feet of boiler heating surface (50 H.P.) shall be equipped with an approved smoke indicator or recorded.

2. For the purpose of this section "smoke indicator" includes, in the case of a boiler room having a fireman in constant attendance, a mirror or other device that enables the fireman to determine conditions at the top of the stack or chimney from the boiler room at all times, and, in the case of a boiler room not having a fireman in constant attendance, means a smoke indicator of a type which will sound an alarm or flash a signal to attract the attention of the fireman.

3. This section shall not apply to a stack or chimney that is readily visible to the fireman from the boiler room without the aid or use of a smoke indicator if a fireman is in constant attendance in such boiler room.

VI

INSTALLATION AND OPERATING LIMITS

1. Subject to the provisions of subsection (4), no person shall in the City of Windsor erect, construct, reconstruct, install, alter or repair any fuel burning

equipment unless and until he shall have first obtained a permit known as an Installation Permit from the Inspector.

2. Every applicant for an Installation Permit shall file with the Inspector, signed by himself or his duly authorized agent which application shall be accompanied by the fees prescribed by Section 8, and plans and specifications, in duplicate, of the fuel-burning equipment and all work proposed in connection therewith, including the form, description and dimensions thereof, and of the building, if any, in which the fuel-burning equipment is or is to be located, the means provided or proposed for admitting air for combustion, the character of the fuel to be used, the maximum quantity of fuel to be burned per hour, the operating requirements and the use to be made of such fuel-burning equipment, and generally all particulars necessary to establish that the fuel-burning equipment and all proposed work in connection therewith for which application is made complies with this by-law and the regulations.

3. Whenever an application in conformity with subsection 2 is filed with the Inspector, he shall thereupon examine and either approve or reject same; and in the event of approval the Inspector shall issue the permit applied for.

4. Subsection (1) shall not apply

(a) in the case of routine maintenance work or minor alterations or repairs which do not change the capacity of fuel-burning equipment or the method of combustion or do not adversely affect the production, emission or discharge of smoke, dust, fly-ash, soot, fumes or other solid or gaseous product of combustion;

(b) in the case of an emergency repair where serious consequences would otherwise result provided that application for the necessary Installation Permit is filed otherwise, in accordance with this section on the first business day following commencement of the repair work.

5. The work of erecting, constructing, reconstructing, installing, altering or repairing fuel-burning equipment shall be commenced and proceeded with within one year from the date of the Installation Permit in respect to such work otherwise such permit shall be void.

6. After any work of erecting, constructing, reconstructing, installing, altering or repairing any fuel-burning equipment is completed, the Inspector shall inspect same, and, if such work conforms to the application, plans and specifications filed therefor, and to the provisions of this by-law and the regulations, shall issue a permit, known as an Operating Permit, to the

person to whom the necessary Installation Permit was issued, which Operating Permit shall be posted in a conspicuous position adjacent to the equipment.

7. No person shall

(a) commence, proceed with or continue any work or erecting, constructing, reconstructing, installing, altering or repairing any fuel-burning equipment without an Installation Permit or which is not in accordance with the application and plans and specifications filed pursuant to subsection (2);

(b) operate or use or cause, suffer or allow to be operated or used any fuel-burning equipment in respect to which an Installation Permit has been issued unless and until he shall have first obtained an Operating Permit pursuant to subsection (6).

8. The issue of an Installation or Operating Permit shall not constitute a defence to a prosecution for a violation of any provision of section 3 or 4 of this by-law.

VII

IMPROVING HEIGHT OF EXISTING STACKS AND CHIMNEYS

1. Where any prior existing chimney or stack is so located that the emissions or discharges, therefrom are a nuisance to the occupants of any building or structure subsequently erected or where any building or structure

subsequently erected adversely affects the draft of any such chimney or stack, such nuisance shall be abated or the adverse affect upon such draft shall be corrected as the case may be, either by increasing the height of the chimney or stack, or by making such other provision as may be deemed effective by the Inspector.

2. The work of increasing the height of the chimney or stack or making such other provision as may be deemed effective by the Inspector shall be done by the owner of the building or structure of which the chimney or stack forms part and the cost and expenses incurred thereby may be recovered by him from the owner of the building or structure subsequently erected, in any court of competent jurisdiction, as a debt due and payable.

VIII

SCHEDULE OF FEES FOR PERMIT

Every application for an installation permit under this by-law shall pay, at the time of filing his permit application, a fee of \$5.00 for the permit to be issued.

IX

DUTIES OF INSPECTOR

1. The Inspector shall be responsible for the enforcement of this by-law and the regulations and his duties shall, among others, be as follows:

(a) to investigate complaints, make observations

of smoke conditions and take the necessary and proper action to abate nuisances therefrom;

(b) to issue permits, certificates and notices under this by-law and the regulations; and to keep records of applications, plans, specifications, permits, certificates, violations, complaints and other matters on file for Department purposes only;

(c) to examine the plans and specifications for all new buildings and alterations of or repairs to existing buildings for the purpose of ascertaining that such buildings when erected, altered or repaired will meet the requirements of this by-law and the regulations;

(d) to examine the plans and specifications for the erection, construction, reconstruction, installation, alteration or repair of fuel-burning equipment and the issuance of Installation Permits in respect thereto;

(e) to inspect the erection, construction, reconstruction, installation, alteration or repair of all fuel-burning equipment for which Installation Permits have been issued and the issuance of Operating Permits in respect thereto;

(f) to publish and disseminate information on methods of smoke reduction;

(g) to enlist the co-operation of civic, technical, scientific and educational groups, societies and organizations in respect to the reduction and abatement of smoke and other atmospheric pollution.

K

INSPECTOR'S POWERS

1. The Inspector and every person appointed to assist him in carrying out his duties under this by-law and the regulations may, at all reasonable hours, enter upon any property in order to ascertain whether or not the by-law or the regulations are being complied with.

2. The Inspector may require the owner, occupant, manager or agent of any property to make such tests of or alterations in fuel-burning equipment thereon or the manner of operating the same as may, in his opinion, be necessary to prevent or lessen the emission or discharge to the atmosphere of smoke, dust, fly-ash, soot, fumes or other solid or gaseous products of combustion.

3. No person shall in any manner obstruct, hinder, delay, resist, prevent or in any way interfere or attempt to interfere with the Inspector or any person appointed to assist him in the carrying out of his duties under this by-law or the regulations or refuse them entry upon any property or premises at any reasonable time in the course of duty.

4. Notwithstanding any provisions of this by-law or of the regulations, the Inspector may permit deviations or exemptions from the requirements of this by-law and the regulations.

XI

ADVISORY BOARD

1. (a) A Board named the Smoke Abatement Advisory Board is hereby established consisting of seven members appointed from time to time by resolution of the Council of the Corporation of the City of Windsor.

(b) A majority of the members of the Board shall not be members of the Council.

(c) Except in the case of a Council member, the members of the Board shall hold office for the term of four years and until their respective successors are appointed; and shall be eligible for re-appointment.

(d) Upon the death or resignation of any member of the Board, his successor shall be appointed by the Council at the next following meeting thereof for the balance of his term of office.

(e) Four members of the Board shall constitute a quorum.

(f) The Board shall at the first meeting in each year appoint one of its members to be chairman.

(g) The Board may meet and adjourn from time to

time, at pleasure, or may be summoned at any time by its chairman.

(h) The City Clerk shall provide all secretarial and clerical facilities required by the Board.

2. The Board shall have the following duties and powers:-

(a) To act in a general advisory capacity to the Council and to the Inspector;

(b) To advise the Inspector as to progress in fuel-burning technique and equipment;

(c) To hear and determine appeals from decisions and orders of the Inspector brought in accordance with the provisions of Section 12 and to conform, vary or reverse any such decision or order;

(d) To pass resolutions regulating, in a manner not inconsistent with this by-law, the erection, construction, reconstruction, installation, alteration, repair, maintenance, operation and use of fuel-burning equipment, internal combustion engines and vehicles, and, from time to time, to alter or revoke any such resolution.

XII

APPEALS TO ADVISORY BOARD

1. Any person complaining of an order or decision of the Inspector may personally or by his agent give notice

in writing to the Inspector that he intends to appeal such order or decision and shall give a name and address where notices can be served upon him.

2. The notice of appeal shall be given to the Inspector within ten days after the day upon which the order or decision complained of is made.

3. The Inspector shall forthwith after receipt of a notice of appeal forward the same to the Chairman of the Board and the Chairman shall appoint a day within fifteen days after receipt of the notice for the hearing of the appeal.

4. The Board shall communicate its decision to the Inspector who shall forthwith notify the appellant.

XIII

FUEL-BURNING EQUIPMENT DEALERS

Every person engaged in selling or leasing for installation in the City of Windsor any fuel-burning equipment shall, within ten days after the date of every sale or lease by him of any such equipment, report in writing to the Inspector particulars of such sale or lease, including the name and address of the purchaser, a description of the equipment sold or leased, the place of delivery and the location of the building or place in which the equipment is to be installed.

XIV

PERSONS LIABLE

All persons owning, operating, or in charge or control of any fuel-burning equipment who violate or cause, suffer or allow any violation of this by-law or of the regulations, either as owners, occupants, managers, agents, superintendents, janitors, engineers, firemen, constructors, installers, mechanics, repairmen or otherwise shall be jointly and severally liable to the penalties imposed by this by-law.

XV

Every person who contravenes (a) any of the provisions of this by-law or of the regulations (b) any decision or order of the Inspector pursuant to this by-law or (c) any decision of the Board shall, upon conviction thereof, forfeit and pay, at the discretion of the convicting magistrate, a penalty not exceeding (exclusive of costs) fifty dollars (\$50.00) for the first offense, one hundred dollars (\$100.00) for the second offence and two hundred dollars (\$200.00) for the third and each subsequent offence, which penalties shall be recoverable under The Summary Convictions Act.

XVI

The provisions of this by-law and the regulations shall be subject to the provisions of Section 414 (a)

of The Municipal Act, (R.S.C. 1937, Chapter 266) as enacted by The Municipal Amendment Act, 1949, provided, however, that this by-law shall not apply either to single or multiple dwellings where each dwelling unit is individually heated by a separate, self-contained heating plant.

XVII

By-Law No. 313 passed the 16th day of December, 1941, is hereby repealed.

XVIII

This by-law shall come into force on the day of the final passing thereof.

A. J. MAUNE

Mayor.

C. V. MATERS,

Clerk.

BILL
No. 3.
1953

B Y - L A W N U M B E R 1033

A BY-LAW TO AMEND BY-LAW NUMBER 799 RESPECTING THE
ABATEMENT OF SMOKE AND OTHER ATMOSPHERIC POLLUTION

Passed the 20th day of January 1953

WHEREAS the Council of The Corporation of the City
of Windsor passed By-law Number 799 on the 6th day of
December, 1949, which by-law is cited at the "Smoke
Abatement By-law";

AND WHEREAS Section 11 of the said by-law estab-
lishes a Smoke Abatement Advisory Board of Seven persons,
and amongst other things defines the manner of their
appointment; duties and terms of office;

AND WHEREAS it is deemed expedient to increase
the personnel of the said Advisory Board from seven to
eight persons;

THEREFORE the Municipal Council of The Corporation
of the City of Windsor enacts as follows -

1. That sub-paragraph (a) of paragraph 1 of Section
11 of By-law Number 799 be and the same is hereby amended
by deleting the word "seven" at the end of the second
line thereof and substituting therefor the word "eight",
so that the said sub-paragraph will read as follows:

"11. (1) (A) A Board named the Smoke Abatement Advisory Board is hereby established consisting of eight members appointed from time to time by resolution of the Council of The Corporation of the City of Windsor."

2. This by-law shall come into force and take effect on the day of the final passing thereof.

A. J. RUMBLE,
MAYOR

C. V. WATERS,
COUNCIL

First reading - January 20, 1953.

Second reading - January 20, 1953.

Third reading - January 20, 1953.

BILL
No. 70
1953.

BY - LAW NUMBER 1095

A BY-LAW TO FURTHER AMEND BY-LAW NUMBER 799 RESPECTING
THE ABATEMENT OF SMOKE AND OTHER ATMOSPHERIC POLLUTION

Passed the 15th day of September 1953

WHEREAS the Council of The Corporation of the City
of Windsor passed By-law Number 799 on the 6th day of
December, 1949, which by-law is cited as the "Smoke
abatement By-law";

AND WHEREAS the said Council passed By-law Number
1033 on the 20th day of January, 1953, to provide for
an increase from seven to eight in the personnel of the
Smoke Abatement Advisory Board established by Section 11
of the said By-law Number 799;

AND WHEREAS it is deemed expedient to further in-
crease the personnel of the said Advisory Board from
eight to nine persons;

THEREFORE the Municipal Council of The Corporation
of the City of Windsor enacts as follows -

1. That sub-paragraph (a) of paragraph 1 of Section
11 of By-law Number 799, as amended by section 1 of By-
law Number 1033, be and the same is hereby further
amended by deleting the word "eight" at the end of the

second line thereof and substituting the word "nine",
so that the said sub-paragraph will read as follows -

"11. (1) (a) A Board, named the Smoke Abatement
Advisory Board, is hereby established
consisting of nine members appointed
from time to time by resolution of the
Council of The Corporation of the City
of Windsor."

2. This by-law shall come into force and take
effect on the day of the final passing thereof.

A. J. BLAINE

CLERK

C. V. ATERS

CLERK

First Reading - September 15, 1953

Second reading - September 15, 1953

Third reading - September 15, 1953

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